```
=> fil reg
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STRUCTURE FILE UPDATES:    1 DEC 2011  HIGHEST RN 1347231-95-1
DICTIONARY FILE UPDATES:   1 DEC 2011  HIGHEST RN 1347231-95-1

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=> fil hcap
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FILE COVERS 1907 - 2 Dec 2011  VOL 155 ISS 24
FILE LAST UPDATED: 1 Dec 2011  (20111201/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED:  Oct 2011
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE:  Oct 2011

HCAplus now includes complete International Patent Classification (IPC)
reclassification data for the third quarter of 2011.

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```

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This file contains CAS Registry Numbers for easy and accurate substance identification.

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=> d que l58
L2           10 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (1305-78-8/BI OR
                1314-13-2/BI OR 1317-61-9/BI OR 50813-16-6/BI OR 7439-92-1/
                BI OR 7439-95-4/BI OR 7440-43-9/BI OR 7440-47-3/BI OR
                7440-50-8/BI OR 7440-62-2/BI)
L3            1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  CALCIUM OXIDE/CN

L4            1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  ZINC OXIDE/CN
L5            5 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L2 AND (MG OR CR
                OR CU OR CD OR V)/ELS
L6            1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  LEAD/CN
L8            1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  FERRITE/CN
L9          337 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  ?FERRITE?/CNS
L11       83972 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L3
L12      144416 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L4
L13     1172227 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L5
L14      255426 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L6
L15      100706 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (L8 OR L9)
L16       10220 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L11 AND L12
L17         413 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L16 AND L15
L19             QUE  SPE=ON  ABB=ON  PLU=ON  HYDROMETALLURG? OR HYDRO MET
                ALLURG? OR  METALLURG?
L20          13 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L17 AND L19
L21        1182 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L15 AND L19
L22          13 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L21 AND L11 AND
                L12
L23          92 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L16 AND L19
L24          14 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L23 AND ?FERRIT?
L25          20 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L20 OR L22 OR L24

L26             QUE  SPE=ON  ABB=ON  PLU=ON  ELECTRIC ARC FURNACE? OR EAF
L27        1023 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19 AND L26
L30             QUE  SPE=ON  ABB=ON  PLU=ON  COLOR? OR COLOUR? OR PIGMENT
                ? OR DYE? OR STAIN? OR PAINT? OR CHROMA# OR CHROMOGEN? OR
                 CHROMOPHOR? OR TINCT? OR TINT?
L31          85 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L27 AND L30
L32           3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 AND COAT?/SC,S
                X
L33          12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 AND PUR/RL
L34          28 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 AND PROC/RL
L35           4 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 AND REM/RL
L36          36 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (L32 OR L33 OR
                L34 OR L35)
L37          15 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L36 AND (L11 OR
                L12 OR L13 OR L14 OR L15)
L38          36 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (L36 OR L37)
L39          55 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L25 OR L38
L40          36 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L39 AND (1802-2003
                )/PRY,AY,PY
L41          11 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L40 AND DUST#
L42         767 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L26 AND L30
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```
L43          10 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L42 AND  (HYDROMET
                ALLURG? OR HYDRO METALLURG?)
L44           8 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L43 AND (1802-2003
                )/PRY,AY,PY
L45          38 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L40 OR L41 OR L44

L46          25 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L45 AND L30
L47           3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L27 AND COAT?/SC,S
                X
L48           1 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L47 AND (1802-2003
                )/PRY,AY,PY
L49          25 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L46 OR L48
L50        6890 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19 AND L30
L51         103 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L50 AND COAT?/SC,S
                X
L52          74 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L51 AND (1802-2003
                )/PRY,AY,PY
L53          21 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L52 AND (L11 OR
                L12 OR L13 OR L14 OR L15)
L54           2 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L53 AND DUST#
L55          21 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (L53 OR L54)
L56          21 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L55 AND (1802-2003
                )/PRY,AY,PY
L57          45 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L49 OR L56
L58          24 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L57 AND PROC/RL


=> fil wpix
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FILE LAST UPDATED:          25 NOV 2011   <20111125/UP>
MOST RECENT UPDATE:           201176      <201176/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE
>>> Now containing more than 1.8 million chemical structures in DCR <<<

>>> IPC, European Classifications (ECLA and ICO), US National
    Classifications and Japanese Classifications (F-Terms and
    FI-Terms) have been updated with reclassifications to mid
    of September 2011.
    No update date (UP) has been created for the reclassified
    documents, but they can be identified by the reclassified
    specific update codes (see HELP CLA for details) <<<

>>> FOR THE LATEST DERWENT WORLD PATENTS INDEX (DWPI)
    STN USER DOCUMENTATION, PLEASE VISIT:
    http://www.stn-international.com/stn_dwpi.html <<<

>>> HELP for European Patent Classifications see HELP ECLA, HELP ICO

>>> New EPC/ICO thesauri now available - see HELP THEsaurus, HELP RCO


=> d que l63
L19              QUE  SPE=ON  ABB=ON  PLU=ON  HYDROMETALLURG? OR HYDRO MET
                 ALLURG? OR  METALLURG?
```

```
L26             QUE  SPE=ON  ABB=ON  PLU=ON  ELECTRIC ARC FURNACE? OR EAF
L27        1023 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19 AND L26
L30             QUE  SPE=ON  ABB=ON  PLU=ON  COLOR? OR COLOUR? OR PIGMENT
                ? OR DYE? OR STAIN? OR PAINT? OR CHROMA# OR CHROMOGEN? OR
                 CHROMOPHOR? OR TINCT? OR TINT?
L60           22 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L27 AND L30
L61            3 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L60 AND COAT?
L62           22 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  (L60 OR L61)
L63            9 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L62 AND (PRY<=2003
                OR AY<=2003 OR PY<=2003)


=> fil japio
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FILE LAST UPDATED:            25 NOV 2011       <20111125/UP>
MOST RECENT PUBLICATION DATE: 25 AUG 2011       <20110825/PD>
>>> GRAPHIC IMAGES AVAILABLE <<<

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=> d que l64
L19             QUE  SPE=ON  ABB=ON  PLU=ON  HYDROMETALLURG? OR HYDRO MET
                ALLURG? OR  METALLURG?
L26             QUE  SPE=ON  ABB=ON  PLU=ON  ELECTRIC ARC FURNACE? OR EAF
L27        1023 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19 AND L26
L30             QUE  SPE=ON  ABB=ON  PLU=ON  COLOR? OR COLOUR? OR PIGMENT
                ? OR DYE? OR STAIN? OR PAINT? OR CHROMA# OR CHROMOGEN? OR
                 CHROMOPHOR? OR TINCT? OR TINT?
L60           22 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L27 AND L30
L61            3 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L60 AND COAT?
L62           22 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  (L60 OR L61)
L64            0 SEA FILE=JAPIO SPE=ON  ABB=ON  PLU=ON  L62 AND (PRY<=2003
                OR AY<=2003 OR PY<=2003)


=> fil pascal
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FILE COVERS 1977 TO DATE.

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=> d que l68
L19             QUE  SPE=ON  ABB=ON  PLU=ON  HYDROMETALLURG? OR HYDRO MET
                ALLURG? OR  METALLURG?
L26             QUE  SPE=ON  ABB=ON  PLU=ON  ELECTRIC ARC FURNACE? OR EAF
L27        1023 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19 AND L26
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```
L30             QUE  SPE=ON  ABB=ON  PLU=ON  COLOR? OR COLOUR? OR PIGMENT
                ? OR DYE? OR STAIN? OR PAINT? OR CHROMA# OR CHROMOGEN? OR
                 CHROMOPHOR? OR TINCT? OR TINT?
L61          22 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L27 AND L30
L62           3 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L60 AND COAT?
L63          22 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  (L60 OR L61)
L66           7 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L62 AND (PRY<=2003
                OR AY<=2003 OR PY<=2003)
L67           0 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L65 AND PIGMENT?
L68           0 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L65 AND COAT?
L69           0 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  (L66 OR L67)


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    THE BASIC INDEX (/BI), ABSTRACT (/AB), and TITLE (/TI) FIELDS  >>>

=> d que l73
L19             QUE  SPE=ON  ABB=ON  PLU=ON  HYDROMETALLURG? OR HYDRO MET
                ALLURG? OR  METALLURG?
L26             QUE  SPE=ON  ABB=ON  PLU=ON  ELECTRIC ARC FURNACE? OR EAF
L27        1023 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19 AND L26
L30             QUE  SPE=ON  ABB=ON  PLU=ON  COLOR? OR COLOUR? OR PIGMENT
                ? OR DYE? OR STAIN? OR PAINT? OR CHROMA# OR CHROMOGEN? OR
                 CHROMOPHOR? OR TINCT? OR TINT?
L60          22 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L27 AND L30
L61           3 SEA FILE=WPIX SPE=ON  ABB=ON  PLU=ON  L60 AND COAT?
L69         144 SEA FILE=COMPENDEX SPE=ON  ABB=ON  PLU=ON  (L60 OR L61)
L70          76 SEA FILE=COMPENDEX SPE=ON  ABB=ON  PLU=ON  L69 AND
                PY<=2003
L71           0 SEA FILE=COMPENDEX SPE=ON  ABB=ON  PLU=ON  L70 AND
                PIGMENT?
L72           1 SEA FILE=COMPENDEX SPE=ON  ABB=ON  PLU=ON  L70 AND COAT?
L73           1 SEA FILE=COMPENDEX SPE=ON  ABB=ON  PLU=ON  (L71 OR L72)


=> dup rem l58 l63 l64 l68 l73
L64 HAS NO ANSWERS
L68 HAS NO ANSWERS
FILE 'HCAPLUS' ENTERED AT 14:03:47 ON 02 DEC 2011
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PROCESSING COMPLETED FOR L63
PROCESSING COMPLETED FOR L64
PROCESSING COMPLETED FOR L68
PROCESSING COMPLETED FOR L73
L74          33 DUP REM L58 L63 L64 L68 L73 (1 DUPLICATE REMOVED)
                ANSWERS '1-24' FROM FILE HCAPLUS
                ANSWERS '25-32' FROM FILE WPIX
                ANSWER '33' FROM FILE COMPENDEX

=> d 1-24 ibib ed abs hitstr hitind

L74  ANSWER 1 OF 33  HCAPLUS  COPYRIGHT 2011 ACS on STN DUPLICATE 1
ACCESSION NUMBER:         2005:570954  HCAPLUS  Full-text
DOCUMENT NUMBER:          143:79717
TITLE:                    A hydrometallurgical separation process of steel
                          mill electric arc furnace dust and the
                          pigments obtained by the process
INVENTOR(S):              Morency, Maurice; Shan, Guoji; Fontaine, Denise
PATENT ASSIGNEE(S):       Fermag Inc., Can.
SOURCE:                   PCT Int. Appl., 87 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.            KIND   DATE        APPLICATION NO.          DATE
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     WO 2005059038          A1    20050630    WO 2004-CA2147           20041216
                                                                <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
             CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
             GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
             KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
             MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
             SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
             VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
             AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
             DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
             NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
             GN, GQ, GW, ML, MR, NE, SN, TD, TG
     CA 2453005             A1    20050617    CA 2003-2453005          20031217
                                                                <--
     CA 2549070             A1    20050630    CA 2004-2549070          20041216
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     BR 2004017201          A     20070206    BR 2004-17201            20041216
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DE 112004002509	T5	20070329	DE 2004-112004002509 <--	20041216
MX 2006006918	A	20070126	MX 2006-6918 <--	20060616
IN 2006KN01682	A	20070511	IN 2006-KN1682 <--	20060616
IN 245773	A1	20110204		
US 20070214912	A1	20070920	US 2007-583183 <--	20070312
PRIORITY APPLN. INFO.:			CA 2003-2453005 A <--	20031217
			WO 2004-CA2147 W	20041216

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 01 Jul 2005

AB A hydrometallurgical process for the treating steel mill elec. arc furnace (EAF) dust containing agglomerates of small ferrite particles and larger magnetite particles comprises the steps of: (a) washing the EAF dust in water to dissolve soluble salts, metals and simple oxides contained in the dust, said washing step being performed under agitation and with an alkaline pH; (b) decanting the solution of step (a) to obtain a supernatant liquid containing the dissolve salts, metals and simple oxides and a slurry containing ferrites and magnetites, a non toxic amount of leachable lead and a reduced amount of calcium; (c) separating the slurry and the supernatant liquid; (d) adding to the slurry obtained in step (c) an anionic surfactant to disperse the ferrite particles adsorbed on the magnetite particles; and (e) treating the slurry from step (d) to produce pigments selected from the group consisting of ferrite pigments, magnetite pigments and ferrite/magnetite pigments.

IT 1305-78-8, Calcium oxide, processes 1314-13-2, Zinc oxide, processes 7439-92-1, Lead, processes 7439-95-4, Magnesium, processes 7440-43-9, Cadmium, processes 7440-47-3, Chromium, processes 7440-50-8, Copper, processes 7440-62-2, Vanadium, processes
(hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments for toners)

RN 1305-78-8 HCAPLUS

CN Calcium oxide (CaO) (CA INDEX NAME)

RN 1314-13-2 HCAPLUS

CN Zinc oxide (ZnO) (CA INDEX NAME)

RN 7439-92-1 HCAPLUS

CN Lead (CA INDEX NAME)

Pb

RN 7439-95-4 HCAPLUS
CN Magnesium (CA INDEX NAME)

Mg

RN 7440-43-9 HCAPLUS
CN Cadmium (CA INDEX NAME)

Cd

RN 7440-47-3 HCAPLUS
CN Chromium (CA INDEX NAME)

Cr

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

RN 7440-62-2 HCAPLUS
CN Vanadium (CA INDEX NAME)

V

IT 1317-61-9P, Iron oxide (Fe3O4), uses
(magnetite-type; hydrometallurgical separation of steel mill elec. arc furnace dust for

manufacture of ferrite-magnetite pigments)
RN 1317-61-9 HCAPLUS
CN Iron oxide (Fe3O4) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IPCI C09C0001-22 [ICM,7]; C22B0007-02 [ICS,7]; C09C0001-00 [ICS,7]; C09C0003-00 [ICS,7]; C22B0003-04 [ICS,7]
IPCR C09C0001-24 [I,A]; C22B0007-00 [I,A]; C22B0007-02 [I,A]
CC 42-6 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55
ST elec arc furnace dust hydrometallurgical sepn ferrite magnetite pigment; steel mill furnace dust hydrometallurgical sepn ferrite magnetite pigment
IT Surfactants
(anionic; in hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments)
IT Ferrites
(hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments)
IT Concrete
(hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments for concrete)
IT Plastics, uses
(hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments for plastics)
IT Electrographic toners
Electrophotographic toners
(hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments for toners)
IT Chlorides, processes
Oxides (inorganic), processes
(hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments for toners)
IT Metallurgy
(hydrometallurgy; hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments for toners)
IT Corrosion inhibitors
(pigments; hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments)
IT Dust
(steelmaking; hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments)
IT 1305-78-8, Calcium oxide, processes 1314-13-2, Zinc oxide, processes 7439-92-1, Lead, processes 7439-95-4, Magnesium, processes 7440-43-9, Cadmium, processes 7440-47-3, Chromium, processes

7440-50-8, Copper, processes 7440-62-2, Vanadium, processes
(hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments for toners)
IT 50813-16-6, Sodium metaphosphate
(in hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments)
IT 1317-61-9P, Iron oxide (Fe3O4), uses
(magnetite-type; hydrometallurgical separation of steel mill elec. arc furnace dust for manufacture of ferrite-magnetite pigments)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 2 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:80909 HCAPLUS Full-text
DOCUMENT NUMBER: 144:151904
TITLE: Method for production of black thermostable inorganic pigments
INVENTOR(S): Kudryavskii, Yu. P.; Zil'berman, M. V.; Shenfel'd, B. E.; Chernyi, S. A.
PATENT ASSIGNEE(S): OOO Nauchno-Proizvodstvennaya Ekologicheskaya Firma "EKO-Tekhnologiya", Russia; FGU Ural NII "Ekologiya"
SOURCE: Russ., 5 pp.
CODEN: RUXXE7
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2268906	C2	20060127	RU 2003-132777 <--	20031110
PRIORITY APPLN. INFO.:			RU 2003-132777 <--	20031110

ED Entered STN: 27 Jan 2006
AB Solution from hydraulic washings of used melts from titanium chlorators containing ferrous chloride (II) is treated with alkaline reagent to pH = 2.5-4.5 with precipitation of oxyhydrates of metals, which are separated from solvent by filtration. Obtained solution is mixed with Cl- containing solution from alkaline treatment of copper-containing melt from the process of separation of titanium tetrachloride from vanadium compds. by means of copper powder. Ratio of vols. of two solns. is 1 : (0.5-2), resp. and the mixture is treated with alkaline reagent to pH = 9-11 with formation of suspension which is filtered. Obtained sediment is washed, dried and calcined at temperature of 400-700°C. The obtained pigment has rich black color, reflection coefficient of 3.5±0.5 %, hiding power of 4.5±0.5 g/m2 and pH of aqueous suspension of 7.0±0.5 and can be used in paint or varnish industry, construction engineering, in coloring plastics and leather, production of enamel paints, primers, putties, wall-paper and veneer. Proposed method

utilizes wastes from process of production of titanium dioxide from titanium tetrachloride.

IT 7440-62-2D, Vanadium, compds.
(production of black thermostable inorg. pigments using waste washings from titanium salts separation processes from)
RN 7440-62-2 HCAPLUS
CN Vanadium (CA INDEX NAME)

V

IT 7440-50-8, Copper, powder, uses
(production of black thermostable inorg. pigments using waste washings from titanium salts separation processes using)
RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IPCI C09C0001-24 [I,A]; C01G0049-08 [I,A]
IPCR C09C0001-24 [I,A]; C01G0049-08 [I,A]
CC 42-6 (Coatings, Inks, and Related Products)
Section cross-reference(s): 54
ST iron manganese copper oxide mixt thermostable black pigment; thermostable black pigment titanium compd sepn washing waste source
IT Pigments, nonbiological
(inorg., thermostable; production of black thermostable inorg. pigments using waste washings from titanium salts separation processes)
IT Wastes
(metallurgical; production of black thermostable inorg. pigments using waste washings from titanium salts separation processes)
IT Calcination
(of pigment; production of black thermostable inorg. pigments using waste washings from titanium salts separation processes)
IT Leather
Paints
Putty
Varnishes
Veneers
(production of black thermostable inorg. pigments using waste washings from titanium salts separation processes useful for)
IT Alkali metal hydroxides
(reagents; production of black thermostable inorg. pigments using waste washings from titanium salts separation processes using)
IT Paper
(wallpaper; production of black thermostable inorg. pigments

using waste washings from titanium salts separation processes useful for)

IT Metallurgy
(wastes; production of black thermostable inorg. pigments using waste washings from titanium salts separation processes)

IT 1332-37-2, Iron oxide, uses 1344-70-3, Copper oxide 11129-60-5, Manganese oxide
(part of pigment; production of black thermostable inorg. pigments using waste washings from titanium salts separation processes)

IT 7440-32-6D, Titanium, salts 7550-45-0, Titanium tetrachloride, uses
(production of black thermostable inorg. pigments using waste washings from titanium salts separation processes)

IT 7440-62-2D, Vanadium, compds.
(production of black thermostable inorg. pigments using waste washings from titanium salts separation processes from)

IT 7758-94-3, Iron (II) chloride
(production of black thermostable inorg. pigments using waste washings from titanium salts separation processes from)

IT 7440-50-8, Copper, powder, uses
(production of black thermostable inorg. pigments using waste washings from titanium salts separation processes using)

L74 ANSWER 3 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2003:347574 HCAPLUS Full-text
DOCUMENT NUMBER: 139:71897
TITLE: Thermodynamic aspects of AOD process for stainless steel making
AUTHOR(S): Dutta, S. K.; Lele, A. B.
CORPORATE SOURCE: Metallurgical Engineering Department, Faculty of Technology & Engineering, M. S. University of Baroda, Vadodara, 390 001, India
SOURCE: Transactions of the Indian Institute of Metals (2003), 56(1), 19-22
CODEN: TIIMA3; ISSN: 0019-493X
PUBLISHER: Indian Institute of Metals
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 08 May 2003

AB Stainless steelmaking processes, used presently, comprise of two stages. Melt down of the charge material is carried out in an elec. arc furnace, and refining is done using a mixture of oxygen and inert gas to reduce CO partial pressure in AOD (argon oxygen decarburization) converter. The salient features of AOD process are high productivity, operational simplicity and metallurgical versatility. The paper discusses the thermodn. aspects of the decarburization and chromium recovery in AOD process.

CC 55-1 (Ferrous Metals and Alloys)

IT Converters (furnaces)
(steelmaking, basic-oxygen; thermodn. aspects of argon oxygen decarburization for stainless steelmaking)

IT Decarburization
Decarburization enthalpy
Thermodynamic simulation
Thermodynamics
(thermodn. aspects of argon oxygen decarburization for stainless steelmaking)

IT 12597-68-1P, Stainless steel, preparation
(steelmaking, oxygen; thermodn. aspects of argon oxygen decarburization for stainless steelmaking)
IT 7782-44-7, Oxygen, processes
(thermodn. aspects of argon oxygen decarburization for stainless steelmaking)
IT 7440-37-1, Argon, uses
(thermodn. aspects of argon oxygen decarburization for stainless steelmaking)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 4 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:64130 HCAPLUS Full-text
DOCUMENT NUMBER: 141:126672
TITLE: Calculation of some related thermodynamic problems in stainless steel refining process. (III) - decarburation, chromium conservation and degassing of liquid iron containing chromium
AUTHOR(S): Wu, Yong-jun; Jiang, Zhou-hua; Liang, Lian-ke; Jiang, Mao-fa; Huang, Zong-ze; Chen, Zhao-ping
CORPORATE SOURCE: Northeastern University, Shenyang, 110004, Peop. Rep. China
SOURCE: Gangtie Yanjiu Xuebao (2003), 15(5), 1-4
CODEN: GAYXEN; ISSN: 1001-0963
PUBLISHER: Gangtie Yanjiu Xuebao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
ED Entered STN: 27 Jan 2004
AB Aiming at the smelting process of stainless steel using tri-step method of "elec. arc furnace + multi-functions converter + VOD" and centering about dephosphorization, the analyses for the feasibility of several important links in the process chain including decarburation, chromium conservation in the late inverter process and degassing in the VOD process, were carried out from the point of view of metallurgy thermodn. A theor. basis was offered for controlling phosphorus and optimizing the dephosphorization process in the whole stainless steel refining process.
IT 7440-47-3, Chromium, uses
(thermodn. anal. of decarburization, chromium conservation, and degassing in refining of stainless steel)
RN 7440-47-3 HCAPLUS
CN Chromium (CA INDEX NAME)

Cr

CC 54-3 (Extractive Metallurgy)
ST stainless steel refining decarburization chromium conservation degassing thermodn analysis
IT Metals, processes
(refining; thermodn. anal. of decarburization, chromium conservation, and degassing in refining of stainless

steel)
IT Decarburization
Degassing
Thermodynamics
(thermodn. anal. of decarburization, chromium conservation, and degassing in refining of stainless steel)
IT 12597-68-1P, Stainless steel, preparation
(thermodn. anal. of decarburization, chromium conservation, and degassing in refining of stainless steel)
IT 7440-47-3, Chromium, uses
(thermodn. anal. of decarburization, chromium conservation, and degassing in refining of stainless steel)

L74 ANSWER 5 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:315142 HCAPLUS Full-text
DOCUMENT NUMBER: 136:328710
TITLE: Method for producing stainless steels, in particular chromium steels and chromium-nickel steels
INVENTOR(S): Goetzinger, Karl Reiner; Lemke, Stefan; Reichel, Johann; Rollinger, Bernt
PATENT ASSIGNEE(S): Sms Demag Aktiengesellschaft, Germany
SOURCE: PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002033130	A1	20020425	WO 2001-EP11190 <--	20010927
W: BR, CN, CZ, IN, JP, KR, MX, PL, RU, US, ZA RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
DE 10115779	A1	20020425	DE 2001-10115779 <--	20010329
DE 10137761	A1	20030206	DE 2001-10137761 <--	20010801
EP 1332232	A1	20030806	EP 2001-969784 <--	20010927
EP 1332232	B1	20040407		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
BR 2001014773	A	20031007	BR 2001-14773 <--	20010927
AT 263845	T	20040415	AT 2001-969784 <--	20010927
JP 2004511659	T	20040415	JP 2002-536098 <--	20010927
ES 2218450	T3	20041116	ES 2001-969784 <--	20010927
CN 1222629	C	20051012	CN 2001-817484 <--	20010927
RU 2272079	C2	20060320	RU 2003-114415	20010927

			<--	
PL 196203	B1	20071231	PL 2001-360842	20010927
			<--	
CZ 299403	B6	20080716	CZ 2003-1111	20010927
			<--	
TW 554046	B	20030921	TW 2001-125517	20011016
			<--	
ZA 2003002646	A	20040308	ZA 2003-2646	20030404
			<--	
MX 2003003402	A	20040504	MX 2003-3402	20030416
			<--	
KR 819126	B1	20080402	KR 2003-7005323	20030416
			<--	
IN 2003CN00736	A	20050415	IN 2003-CN736	20030514
			<--	
IN 208649	A1	20070831		
US 20040099091	A1	20040527	US 2003-399007	20030721
			<--	
US 7094271	B2	20060822		
PRIORITY APPLN. INFO.:			DE 2000-10051803	A 20001018
			<--	
			DE 2001-10115779	A 20010329
			<--	
			DE 2001-10134880	A 20010718
			<--	
			DE 2001-10137761	A 20010801
			<--	
			WO 2001-EP11190	W 20010927
			<--	

ED Entered STN: 26 Apr 2002

AB The invention relates to a method for producing stainless steels, Cr steels and Cr-Ni steels. The method is carried out in a melting apparatus containing a metallurgical vessel or in a melting apparatus containing ≥2 vessels for supplying a steel-casting apparatus, with an elec. arc furnace process and an air blast-refining process taking place alternately in the 2 vessels. To increase efficiency of the method, a reversible treatment of unreduced converter slag is carried out in the elec. arc furnace mode. In the 1st treatment stage, the slag with a high Cr content is melted together with the added charge, the slag is then reduced during the melting process with Si and C under favorable thermodn. conditions of the arc when the slag attains a temperature of ≥1,490°, and the slag is subsequently removed. Then, the air blast-refining process is carried out, during which the C content is decreased below 0.9%. The metal melt is tapped at a tapping temperature of 1,620-1,720°, the unreduced slag with a high Cr content from the air-refining process remains in the treatment vessel.

IT 7440-47-3, Chromium, processes
(reduction from chromium oxide in steelmaking slag)

RN 7440-47-3 HCAPLUS

CN Chromium (CA INDEX NAME)

Cr

IPCI C21C0007-068 [ICM,7]; C21C0005-52 [ICS,7]

IPCR C21C0007-00 [I,A]; C21C0005-00 [I,A]; C21C0005-52 [I,A]; C21C0007-068 [I,A]; F27B0003-04 [I,A]; F27B0003-22 [I,A]
CC 55-1 (Ferrous Metals and Alloys)
ST stainless steel manuf
IT Slags
(converter; treatment of chromium-rich slag in stainless steel manufacture)
IT Slags
(steelmaking; treatment of chromium-rich slag in stainless steel manufacture)
IT 12597-68-1P, Stainless steel, preparation
(method for producing stainless steels, in particular chromium steels and chromium-nickel steels)
IT 7440-47-3, Chromium, processes
(reduction from chromium oxide in steelmaking slag)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 6 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:873048 HCAPLUS Full-text
DOCUMENT NUMBER: 138:126579
TITLE: Effluent limitations guidelines, pretreatments standards, and new source performance standards for the iron and steel manufacturing point source category
CORPORATE SOURCE: Environmetnal Protection Agency, EPA West, Washington, DC, 20460, USA
SOURCE: Federal Register (2002), 67(201), 64215-64269, 17 Oct 2002
CODEN: FEREAC; ISSN: 0097-6326
PUBLISHER: Superintendent of Documents
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 19 Nov 2002
AB This final rule represents the culmination of the USEPA effort to revise Clean Water Act (CWA) effluent limitations guidelines and stds. for wastewater discharges from the iron and steel manufacturing industry. This final regulation revises technol.-based effluent limitations guidelines and stds. for wastewater discharges associated with metallurgical coke-making, sintering, and iron-making operations; and codifies new effluent limitations guidelines and stds. for direct reduced iron-making, briquetting, and forging. EPA also revised regulations for the steelmaking sub-category, to provide an allowance for existing basic oxygen furnaces operating semi-wet air pollution control systems, and to establish technol.-based effluent limitations guidelines and stds. for elec. arc furnaces operating semi-wet pollution control systems. EPA eliminated rule refs. to the following obsolete operations: beehive coke-making in the coke-making sub-category, ferromanganese blast furnaces in the iron-making sub-category, and open hearth furnace operations in the steel-making sub-category. EPA did not revise effluent limitations guidelines and stds. for the remaining sub-categories within this industrial category: vacuum degassing, continuous casting, hot, forming, salt bath descaling, acid pickling, cold forming, alkaline cleaning, and hot coating. Nor did EPA codify a new sub-categorization scheme and associated definitions to support the new sub-categorization for this industrial category.

EPA expects compliance with this regulation to reduce the discharge of conventional pollutants by at least 351,000 lb/yr and toxic and non-conventional pollutants by at least 1,018,000 lb/yr. EPA ests. the annual cost of the rule will be $12 million (pre-tax 2001 dollars), and ests. annual benefits from the rule will range from $1.4 million to $7.3 million (2001 dollars).

IT 7439-92-1, Lead, processes
(effluent limitations guidelines and pretreatment and new source performance stds. for iron and steel manufacturing point source category)

RN 7439-92-1 HCAPLUS

CN Lead (CA INDEX NAME)

Pb

IT 7440-47-3, Chromium, processes
(total; effluent limitations guidelines and pretreatment and new source performance stds. for iron and steel manufacturing point source category)

RN 7440-47-3 HCAPLUS

CN Chromium (CA INDEX NAME)

Cr

CC 61-2 (Water)
Section cross-reference(s): 55, 59, 60

IT 11121-90-7P, Carbon steel, preparation 12597-68-1P, Stainless steel, preparation 12597-69-2P, Steel, preparation
(effluent limitations guidelines and pretreatment and new source performance stds. for iron and steel manufacturing point source category)

IT 50-32-8, Benzo(a)pyrene, processes 83-07-8, 4-Aminoantipyrine 91-20-3, Naphthalene, processes 108-95-2, Phenol, processes 7439-89-6, Iron, processes 7439-92-1, Lead, processes 7440-02-0, Nickel, processes 7440-66-6, Zinc, processes 18540-29-9, Cr6+, processes 51207-31-9, 2,3,7,8-Tetrachlorodibenzofuran
(effluent limitations guidelines and pretreatment and new source performance stds. for iron and steel manufacturing point source category)

IT 7440-47-3, Chromium, processes
(total; effluent limitations guidelines and pretreatment and new source performance stds. for iron and steel manufacturing point source category)

L74 ANSWER 7 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2003:101786 HCAPLUS Full-text

DOCUMENT NUMBER: 138:307159

TITLE: Reduction of steelmaking slags for recovery of valuable metals and oxide materials

AUTHOR(S): Ye, Guozhu; Burstrom, Eric; Kuhn, Michael; Piret, Jacques

CORPORATE SOURCE: MEFOS, Lulea, Swed.
SOURCE: Scandinavian Journal of Metallurgy (2002), Volume Date 2003, 32(1), 7-14
CODEN: SJMLAG; ISSN: 0371-0459
PUBLISHER: Blackwell Munksgaard
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 10 Feb 2003
AB Extensive researches on slag reduction for recovery of valuable metals and oxide materials from metallurgical slags and other wastes using a DC furnace with a hollow electrode were conducted in 2 major EU projects with close cooperation between MEFOS, FEhS and CRM. Steel slags and other residues were introduced into the reactor through the hollow electrode to the hot plasma. The materials were melted, reduced and mixed. The final products were a metal product, a slag product with targeted chemical composition and a dust fraction with a high content of ZnO. Different steel-making slags and residues including BOF slag with low and high V-content as well as EAF and AOD slags from stainless steel production, EAF dust, oily millscale, hydroxide sludge, BOF and BF dust were treated. The slag products include a metallurgical powder for desulfurization of steel, hydraulic binder and slag stones for construction applications. The metals obtained are rich in Fe, Mn, V and Cr depending on the treated slag and residues. The environmental compatibility and mech. properties of the slags were improved after slag reduction
IT 1314-13-2, Zinc oxide (ZnO), processes
(reduction of steelmaking slags for recovery of valuable metals and oxide materials)
RN 1314-13-2 HCAPLUS
CN Zinc oxide (ZnO) (CA INDEX NAME)

CC 55-1 (Ferrous Metals and Alloys)
IT 12597-68-1P, Stainless steel, preparation
(reduction of steelmaking slags for recovery of valuable metals and oxide materials)
IT 1314-13-2, Zinc oxide (ZnO), processes
(reduction of steelmaking slags for recovery of valuable metals and oxide materials)
OS.CITING REF COUNT: 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

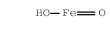
L74 ANSWER 8 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2001:253345 HCAPLUS Full-text
DOCUMENT NUMBER: 134:370484
TITLE: Ceramic pigments based on technogenic wastes
AUTHOR(S): Kudryashov, N. I.
CORPORATE SOURCE: RKHTU im. D. I. Mendeleeva, Russia
SOURCE: Ekologiya i Promyshlennost Rossii (2000), (Feb.), 37-38
CODEN: EPRKAS

PUBLISHER: MISiS, Redaktsiya EKiP
DOCUMENT TYPE: Journal
LANGUAGE: Russian
ED Entered STN: 11 Apr 2001

AB A technol. including synthesis of α-FeOOH goethite was used for the manufacture of ceramic pigments from technogenic wastes of non-ferrous metallurgy. The goethite synthesis was carried out with the use of alkali and soda-based ppts. that are used for the same purposes in the manufacture of goethite magnetic powders. The yellow, red, black, and brown-red pigments obtained can be successfully used for color glaze manufacturing Olive, brown-yellow, bright-blue, and cofee-colored ceramic pigments were also manufactured from waste catalysts based on the mixture of TiO2 and Al2O3 containing crystalline phase of ilmenite, spinel, and tieilite Al2TiO5. Chromophores were added to the pigment compns. as ion additives.

IT 1310-14-1, Goethite
(ceramic pigment based on; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

RN 1310-14-1 HCAPLUS
CN Goethite (Fe(OH)O) (CA INDEX NAME)



CC 57-2 (Ceramics)
Section cross-reference(s): 42

ST ceramic pigment technogenic waste goethite chromophore

IT Spinel-group minerals
(ceramic pigment component; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

IT Pigments, nonbiological
(ceramic, manufactured from technogenic wastes; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

IT Glazes (vitreous)
(color glaze; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

IT Chromophores
(ion additives in ceramic pigments; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

IT Recycling
Solid wastes
(nonferrous metallurgy wastes; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

IT Metallurgy
(nonferrous, wastes of; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

IT Bases, uses
(precipitant; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)
IT Catalysts
(wastes of ceramic catalysts; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)
IT 1310-14-1, Goethite
(ceramic pigment based on; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)
IT 12168-52-4, Ilmenite 12252-74-3, Tieilite
(ceramic pigment component; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)
IT 1344-28-1, Alumina, processes 13463-67-7, Titanium oxide (TiO2), processes
(ceramic pigment component; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)
IT 144-55-8, Soda, uses
(precipitant; ceramic pigments based on metallurgical wastes containing goethite, ilmenite, spinel and tieilite for coloring glazes)

L74 ANSWER 9 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1999:317343 HCAPLUS Full-text
DOCUMENT NUMBER: 130:355618
TITLE: Low-frictional materials comprising sintered alloys having fluoropolymer surfaces and their manufacture
INVENTOR(S): Ichihara, Yuichi; Kondo, Tetsuya; Yanagihara, Kazuo
PATENT ASSIGNEE(S): Daido Steel Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11131198	A	19990518	JP 1997-299035 <--	19971030
PRIORITY APPLN. INFO.:			JP 1997-299035 <--	19971030

ED Entered STN: 24 May 1999
AB Sintered alloys consisting of duplex stainless steel (austenite + ferrite) matrix and hard alloy dispersants with their porous surfaces impregnated with fluoropolymers are claimed. The materials are manufactured by forming and sintering of duplex stainless steel powder, hard alloy powder, and additives followed by impregnation of surface pores of the sintered materials with fluoropolymers. The materials can be used as sliding parts without using lubricating oils.

IT 12427-24-6, Ferrite (ferrous metal component)
(duplex stainless steel; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
RN 12427-24-6 HCAPLUS
CN Ferrite (ferrous metal component) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IPCI C22C0038-00 [ICM,6]; C10M0105-52 [ICS,6]; C22C0033-02 [ICS,6]; F16C0033-10 [ICS,6]; F16C0033-12 [ICS,6]; F16N0015-00 [ICS,6]; B22F0003-26 [ICS,6]; C10N0040-02 [ICS,6]
IPCR F16C0033-10 [I,A]; B22F0003-26 [I,A]; B22F0005-00 [I,A]; C10M0105-52 [I,A]; C10N0040-02 [N,A]; C22C0033-02 [I,A]; C22C0038-00 [I,A]; F16C0033-12 [I,A]; F16N0015-00 [I,A]
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 42, 55
ST sintered alloy fluoropolymer coating low friction; sliding part fluoropolymer surface treatment alloy; stainless steel hard alloy powder metallurgy; duplex stainless steel low friction part
IT Coating materials
(antifriction; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Fluoropolymers, processes
(fluoroalkoxy group-containing, surface layer; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Powder metallurgy
(fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Fluoropolymers, processes
(fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Cermets
(hard alloy powder; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Perfluoro compounds
Perfluoro compounds
Vinyl compounds, processes
Vinyl compounds, processes
(perfluoroalkyl vinyl ether polymers, with tetrafluoroethylene, surface layer; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Ethers, processes
Ethers, processes
(perfluoroalkyl vinyl, polymers, with tetrafluoroethylene, surface layer; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Machinery parts
(sliding; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder

for sliding parts)
IT Fluoropolymers, processes
Fluoropolymers, processes
(surface layer; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Ethers, processes
(vinyl, perfluoroalkyl, polymers, with tetrafluoroethylene, surface layer; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Titanium alloy
(hard alloy; dfluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT Chromium alloy
Hafnium alloy
Iron alloy
Molybdenum alloy
Niobium alloy
Tantalum alloy
Tungsten alloy
Vanadium alloy
Zirconium alloy
(hard alloy; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT 12244-31-4, Austenite, processes 12427-24-6, Ferrite
(ferrous metal component) 72266-91-2 224639-32-1
(duplex stainless steel; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT 25101-45-5
(fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT 220525-23-5
(hard alloy; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
IT 116-14-3D, Tetrafluoroethylene, polymer with perfluoroalkylvinyl ethers 9002-83-9, PCTFE 9002-84-0, Teflon 25038-71-5, Ethylene-tetrafluoroethylene copolymer 25067-11-2, FEP
(surface layer; fluoropolymer-treated powder metallurgy products of duplex stainless steel and hard alloy powder for sliding parts)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L74 ANSWER 10 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2000:171459 HCAPLUS Full-text
DOCUMENT NUMBER: 132:198438
TITLE: Hematite precipitation from ferric chloride media at atmospheric pressure: a new approach to iron control and recycling
AUTHOR(S): Dutrizac, J. E.; Riveros, P. A.

CORPORATE SOURCE: CANMET, Ottawa, ON, K1A 0G1, Can.
SOURCE: REWAS '99--Global Symposium on Recycling, Waste Treatment and Clean Technology, Proceedings, San Sebastian, Spain, Sept. 5-9, 1999 (1999), Volume 1, 663-673. Editor(s): Gaballah, I.; Hager, J.; Solozabal, R. Minerals, Metals & Materials Society: Warrendale, Pa.
CODEN: 68SKAE
DOCUMENT TYPE: Conference
LANGUAGE: English
ED Entered STN: 16 Mar 2000
AB The precipitation of hematite from ferric chloride media at temps. <100°C and at ambient pressure was studied as part of a program to recover a recyclable iron product from metallurgical processing streams or effluents. Hematite (Fe_2O_3) can be formed in preference to ferric oxyhydroxides (e.g., β-FeO.OH) at temps. as low as 60°C by controlling the precipitation conditions, especially seeding. The hematite product typically contains >66% Fe and <1% Cl, and its composition does not change significantly on repeated recycling. The amount of product formed increases significantly with increasing $FeCl_3$ concns. to .apprx.0.2 M $FeCl_3$, but nearly constant product yields are obtained thereafter; the ppts. consist only of hematite provided that an adequate amount of seed is present. The extent of the precipitation reaction depends principally on the temperature and the free acid concentration; the controlled addition of a base allows the nearly complete elimination of the iron from metallurgical processing streams or effluents as filterable hematite. The purity of the hematite should allow its use for the manufacture of iron and cement or as a pigmenting agent for bricks and paint.
IT 1314-13-2, Zinc oxide, processes
(hematite precipitation from ferric chloride solns. at atmospheric pressure)
RN 1314-13-2 HCAPLUS
CN Zinc oxide (ZnO) (CA INDEX NAME)

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 41, 42, 49, 55, 58
IT Pigments, nonbiological
Recycling
(hematite precipitation from ferric chloride solns. at atmospheric pressure)
IT 1314-13-2, Zinc oxide, processes
(hematite precipitation from ferric chloride solns. at atmospheric pressure)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 11 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1999:732405 HCAPLUS Full-text
DOCUMENT NUMBER: 132:63683
TITLE: The "Mappae Clavicula", an early medieval textbook on surface technology
AUTHOR(S): Raub, Christoph J.

CORPORATE SOURCE: Schbisch Gmund, Germany
SOURCE: AIFM Galvanotecnica e Nuove Finiture (1999), 9(4), 215-223
CODEN: AGNFEQ; ISSN: 1121-855X
PUBLISHER: Associazione Italiana Finiture dei Metalli
DOCUMENT TYPE: Journal
LANGUAGE: Italian/English
ED Entered STN: 18 Nov 1999
AB The Mappae Clavicula is a medieval text on handling silver and gold. Discussion topics include preparation of surfaces for painting or coating with gold or silver, preparation of surfaces faking gold and silver, "enrichment" gilding, prepns. for gold inks, niello, writing colored letters in white gold, metal coloring, attaching gold and tin leaf, fluxes, electroless plating, assaying of gold, and annealing furnace procedures.
IT 7440-50-8, Copper, properties
(surface techniques for gold and silver in Mappae Clavicula medieval text)
RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

CC 20-2 (History, Education, and Documentation)
Section cross-reference(s): 42, 56
IT Paints
(gold-containing; surface techniques for gold and silver in Mappae Clavicula medieval text)
IT Alloying
Annealing
History
Inks
Metallurgy
(surface techniques for gold and silver in Mappae Clavicula medieval text)
IT 7440-50-8, Copper, properties
(surface techniques for gold and silver in Mappae Clavicula medieval text)
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 12 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1999:335528 HCAPLUS Full-text
DOCUMENT NUMBER: 130:339778
TITLE: Recent trends in electric arc furnace practice
AUTHOR(S): Hariharan, M.; Gunasekar, M. P.
CORPORATE SOURCE: Central Electrochemical Research Institute, Karaikudi, 630 006, India
SOURCE: Transactions of the Indian Institute of Metals (1998), 51(5), 363-367
CODEN: TIIMA3; ISSN: 0019-493X
PUBLISHER: Indian Institute of Metals

DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 02 Jun 1999
AB Ferro alloys, calcium carbide, aluminum and calcium-silicon alloys, iron and steel are some of the important metallurgical products of elec. arc furnaces (EAF). Processing of ilmenite in EAF for producing synthetic rutile and pig iron is the future trend in titanium dioxide pigment industries as this process ensures a cleaner technol. EAFs are also being employed to vitrify a variety of wastes from mineral and metallurgical industries, as such a practice helps in recovery of metals and makes disposal problems easier. Electrothermal processes are highly energy intensive and hence recent studies in this area pertain mainly to lowering the manufacturing cost with the development of ultra high furnaces and also d.c. and plasma arc furnaces.
CC 47-4 (Apparatus and Plant Equipment)
ST elec arc furnace practice; ferro alloy elec arc furnace; calcium carbide elec arc furnace; aluminum calcium silicon alloy elec arc furnaces; iron elec arc furnace; steel elec arc furnace; ilmenite processing elec arc furnace; waste vitrification elec arc furnace; plasma arc furnace electrothermal processing
IT Electric furnaces
(arc; trends in elec. arc furnace practice)
IT Ferroalloys
(elec. arc furnace in production of ferroalloys)
IT Solid wastes
(elec. arc furnace in vitrification of wastes from mineral and metallurgical industries)
IT Aluminum alloy
(elec. arc furnace in production of aluminum alloy)
IT 12168-52-4, Ilmenite
(elec. arc furnace in processing of ilmenite)
IT 75-20-7P, Calcium carbide
(elec. arc furnace in production of calcium carbide)
IT 12638-76-5P, Calcium-silicon alloy
(elec. arc furnace in production of calcium-silicon alloy)
IT 7439-89-6P, Iron, preparation
(elec. arc furnace in production of iron)
IT 12597-69-2P, Steel, preparation
(elec. arc furnace in production of steel)
REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 13 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1999:269854 HCAPLUS Full-text
DOCUMENT NUMBER: 131:47463
TITLE: EAF stainless-steel dust: characteristics and potential metal immobilization through thermal treatment

AUTHOR(S): D'Souza, N.; Kozinski, J. A.; Szpunar, J. A.
CORPORATE SOURCE: Department of Metallurgical Engineering, McGill Metals Processing Centre, McGill University, Montreal, QC, H2A 2B2, Can.
SOURCE: Waste Processing and Recycling in Mineral and Metallurgical Industries III, Proceedings of the International Symposium on Waste Processing and Recycling in MIneral and Metallurgical Industries, 3rd, Calgary, Alberta, Aug. 16-19, 1998 (1998), 247-258. Editor(s): Rao, S. Ramachandra. Canadian Institute of Mining, Metallurgy and Petroleum: Montreal, Que.
CODEN: 67NLAJ
DOCUMENT TYPE: Conference
LANGUAGE: English
ED Entered STN: 03 May 1999
AB Along with the essential importance of the metallurgical sector, one must recognize that it is also one of the largest sources of environmental pollution. In particular, the problem of elec. arc furnace (EAF) dusts is of a growing concern due to the increase in popularity of EAF steelmaking. This dust is classified as a hazardous product due to the elevated content of toxic metals (e.g., Cr). Studies on the properties of EAF dusts are sparse. Expts. were performed in order to determine the chemical and phys. characteristics of the dust in terms of elemental and phase composition, size distribution, morphol., metal distribution and dust leachability. In addition, preliminary thermal remediation expts. were carried out in a Thermo-Gravimetric Analyzer (TGA) to determine the effects of thermal treatment on EAF dust leachability. Leaching results showed that thermal remediation of EAF dust could result in a marked improvement in leachability properties.
CC 55-1 (Ferrous Metals and Alloys)
ST stainless steel flue dust heat treatment
IT Heat treatment
(elec. arc furnace stainless
-steel dust characteristics metal immobilization through heat treatment)
IT Metals, processes
(elec. arc furnace stainless
-steel dust characteristics metal immobilization through heat treatment)
IT Flue dust
(elec. arc furnace stainless
-steel dust; elec. arc
furnace stainless-steel dust
characteristics metal immobilization through heat treatment)
IT 12597-68-1P, Stainless steel, preparation
(flue dust from; elec. arc
furnace stainless-steel dust
characteristics metal immobilization through heat treatment)
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 14 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1997:466420 HCAPLUS Full-text
DOCUMENT NUMBER: 127:151305
ORIGINAL REFERENCE NO.: 127:29208h,29209a

TITLE: Development of CSCB BOF process for stainless steelmaking
AUTHOR(S): Chou, Sun-Ju; Wang, Huan-Wen; Chou, Wen-Hsien
CORPORATE SOURCE: Steelmaking Dep., China Steel Corporation, Taiwan
SOURCE: Kuangye (Taipei) (1997), 41(1), 33-42
CODEN: KNGYAX; ISSN: 0451-0011
PUBLISHER: Chinese Institute of Mining & Metallurgical Engineers
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
ED Entered STN: 25 Jul 1997
AB Stainless steels including AISI 306, 316 and 430 grades have been successfully mass-produced by CSCB (China Steel Combined Blowing) BOF (Basic Oxygen Furnace) process with the use of dephosphorized hot metal from blast furnace. The functions of melting, decarburization and Cr-reduction which are traditionally achieved by EAF (Elec. Arc Furnace) and AOD (Argon Oxygen Decarburization) furnace have been smoothly substituted with this process. Both a self-constructed exptl. BOF of 1-metric ton capacity and a self-revamped BOF of 120-metric ton capacity were applied to develop CSCB process. Large amount of alloys, scrap and fluxes could be effectively melted in CSCB BOF by the top addition of lumpy coke to solve the problem of heat shortage. The temperature of liquid steel higher than 1700°C at the end of oxygen blowing could be easily obtained. In addition, the oxygen efficiency for carbon removal was well controlled by single lance top-blowing so as to decrease Cr oxidation Meanwhile, not only desulfurization and alloy recovery but also the lining life of exchangeable bottom were obviously improved due to the optimization of bottom-blowing operation.
CC 55-1 (Ferrous Metals and Alloys)
ST stainless steel manuf basic oxygen converter
IT Converters (furnaces)
(basic oxygen; development of China Steel combined blowing BOF process for stainless steelmaking)
IT Decarburization
Desulfurization
(development of China Steel combined blowing BOF process for stainless steelmaking)
IT Scrap metal
(melting of; development of China Steel combined blowing BOF process for stainless steelmaking)
IT Coke
(metallurgical; development of China Steel combined blowing BOF process for stainless steelmaking)
IT 11107-04-3P, Aisi 316 11109-50-5P, Aisi 304 11109-52-7P, Aisi 430
12611-79-9P, Aisi 410 37241-55-7P, Aisi 420
(development of China Steel combined blowing BOF process for stainless steelmaking)
IT 12597-69-2P, Steel, preparation
(steelmaking; development of China Steel combined blowing BOF process for stainless steelmaking)

L74 ANSWER 15 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1995:848916 HCAPLUS Full-text
DOCUMENT NUMBER: 123:294839
ORIGINAL REFERENCE NO.: 123:52665a,52668a
TITLE: Manufacture of stone casts from blast furnace slag of Cherepovetz Metallurgical Complex [Russia]
AUTHOR(S): Bikbau, M. Ya.; Shcheglova, N. N.; Borukhin, B.

Ya.; Batanova, A. M.; Pavlushkina, T. K.; Semenova, I. V.
CORPORATE SOURCE: AO "IMET", Ukraine
SOURCE: Steklo i Keramika (1995), (1-2), 36-40
CODEN: STKRAQ; ISSN: 0131-9582
PUBLISHER: Stroiizdat
DOCUMENT TYPE: Journal
LANGUAGE: Russian
ED Entered STN: 11 Oct 1995
AB The feasibility was evaluated of using blast furnace slag from the Cherepovetz Plant as a raw material for the manufacture of decorative cast stone wares. Compositionally, the slags plot within the field occupied by wollastonite-gehlenite-anorthite in the ternary diagram SiO2-Al2O3-CaO; the viscosity of the molten slag ranges from 1.06 (at 1600°) to 16.0 dPa (at 1300°). A mixture of slag, quartz sand (13-23%), and K nitrate (1-5%) was melted in an elec.-arc furnace at ≤ 1500°; the coloring agents added were oxides of Co, Mn, Cr, and Cu. The d. (2.77-2.97 g/cm3), coefficient of thermal expansion (≤ 96 X 10-7°), and compressive strength (81-296 MPa) of the cast stone wares were determined Phases present in the cast stone were monoclinic pyroxenes, melilite, pseudowollastonite, and glass.
CC 58-4 (Cement, Concrete, and Related Building Materials)

L74 ANSWER 16 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1994:304003 HCAPLUS Full-text
DOCUMENT NUMBER: 120:304003
ORIGINAL REFERENCE NO.: 120:53437a,53440a
TITLE: Galvanized steel, a recyclable material
AUTHOR(S): Druet, J. P.; Quantin, D.
CORPORATE SOURCE: Unimetal, Fr.
SOURCE: Revue de Metallurgie/Cahiers d'Informations Techniques (1993), 90(11), 1521-7
CODEN: CITMDA; ISSN: 0035-1563
DOCUMENT TYPE: Journal; General Review
LANGUAGE: French
ED Entered STN: 11 Jun 1994
AB A review with 3 refs. A new era begins where environmental regulations prescribe the development of totally recyclable manufactured products. Steel, to keep its leadership among materials, must be anticorrosion coated. For that purpose, zinc is << steel friend >>. it is the most important protective metal for steel with an increase of 30 % in the amount of zinc coated products produced in four years. This high progression results in an increasing amount on the market of zinc coated scraps (from coating lines in steel industry, from manufacturing products lines, or scraps outcoming from life end objects) as well as of zinc rich residues in relation with the coating fabrication. For being considered as recyclable, a material must be:. - First, easily sorted and picked up from scraps,. - Then, liably separated from a final residue and prepared for a << new life >>. Traditionally, zinc and steel are extensively recycled for economical and energetic reasons. Coating manufacturing residues are of various types:. - Drosses (mixts. of zinc and Fe-Zn intermetallic compds.),. - Ashes (zinc, zinc oxide and chloride, etc.),. - Zinc dusts,. - Acid solns., etc. The metallic zinc and steel scraps can be recycled:. - In foundries (with some difficulties in relation with zinc evaporation and metallurgical particulars of cast iron),. - In steelmaking (as cooling addns.),. - And, in most cases, in elec. arc furnaces. During recycling, a key issue is the important volatility of zinc products which leads to zinc rich dusts escaping together with exhaust gases (about 20 kg per steel ton). They must be captured then treated. Dust treatment techniques are of two main types: either

pyrometallurgical (including the most used technique, known as Waelz technique) or hydrometallurgical (SERH for example). As to coating industry residues (drosses, ashes, etc.), the rotating furnace techniques are well-adapted, providing zinc oxide products which can be used in rubber, paint, pigments industries, etc. Thus, zinc coatings for steel are not a handicap to steel recycling. Treatment technologies are improving towards a better efficiency.
CC 55-0 (Ferrous Metals and Alloys)

L74 ANSWER 17 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1994:140334 HCAPLUS Full-text
DOCUMENT NUMBER: 120:140334
ORIGINAL REFERENCE NO.: 120:24647a,24650a
TITLE: Effect of secondary metallurgy on corrosion behavior of cast duplex stainless steel
AUTHOR(S): Christianus, D.
CORPORATE SOURCE: Werk Friedrich Wilhelms-Huette, Thyssen Guss AG, Muelheim amder Ruhr, D-4330, Germany
SOURCE: Duplex Stainless Steels '91 (1991), Volume 2, 1353-61. Editor(s): Charles, Jacques; Bernhardsson, Sven. Ed. Phys.: Les Ulis, Fr. CODEN: 59LQAR
DOCUMENT TYPE: Conference
LANGUAGE: English
ED Entered STN: 19 Mar 1994
AB Steel for high integrity castings is in many cases being refined by secondary metallurgy. Normally AOD- or VOD-processes are used. A newly developed vacuum-argon-refining process (VARP) was applied for investigating the effect of this process on the corrosion behavior of cast stainless duplex steel. For this purpose two melts of the grade G-X 3 CrNiMoCuN 26 6 3 were procured, one from an induction furnace, the other after premelting in an elec. arc furnace refined in a VARP-converter. The castings with wall thicknesses from 70 to 300 mm were submitted to several corrosion tests. The melts showed only a slight difference in pitting resistance equivalent (PRE) and save the sulfur content, which is typical for the process, only small differences in chemical composition The differences in Al- and Nb-content nevertheless lead to different primary structure and mech. properties. This had no effect on corrosion resistance. Corrosion-tests in aerated H2SO4 showed no difference, but the c.d. potential curve had a higher break down potential in the presence of Cl-ions for the vacuum treated steel. The Huey-Test also gave considerably better results for VARP-Steel, and an especially great advantage was found for the resistance to pitting and crevice corrosion in FeCl3 according to ASTM-G 48 and in synthetic flue-gas desulfurization condensate. No difference was found during fatigue tests in artificial sea water, but a certain advantage of VARP-cast steel in case of stress corrosion cracking (NACE SCC-test). Summarizing secondary metallurgy of cast duplex stainless steel in a vacuum-oxygen-converter improves the corrosion behavior under several important corrosion conditions.
CC 55-10 (Ferrous Metals and Alloys)
ST corrosion cast duplex stainless steel; stainless steel secondary metallurgy corrosion
IT Cast metals and alloys
(duplex stainless steel, corrosion behavior of, secondary metallurgy effect on)
IT 117771-93-4, G-X3CrNiMoCuN-26-6-3
(corrosion behavior of cast, secondary metallurgy effect on)
OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS

RECORD (3 CITINGS)

L74 ANSWER 18 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1989:578418 HCAPLUS Full-text
DOCUMENT NUMBER: 111:178418
ORIGINAL REFERENCE NO.: 111:29651a,29654a
TITLE: Theory and practice of ASM process for the production of stainless steel
AUTHOR(S): Bharal, N. K.
CORPORATE SOURCE: Panchmahal Steel Ltd., India
SOURCE: Tool & Alloy Steels (1989), 23(2-3), 63-73
CODEN: TASTDL; ISSN: 0377-9408
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 10 Nov 1989
AB The production of stainless steel (SS) by the Ar secondary metallurgy process (ASM) is considered using AISI301 steel as an example. When a SS melt is decarburized by conventional O lancing the atmospheric in equilibrium with the melt is essentially CO which affects the amount of Cr retained by the melt. The dilution of CO by Ar greatly increases the amount of Cr that is retained by melt in ASM. A 17 ton elec. arc furnace was used for ASM, the manufactured AISI301 steel being continuously cast to produce Snorkel castings of a rectangular form. Ferrochromium and ferronickel ferroalloys added for AISI301 adjustment show .apprx.96% recovery while recovery of ferromanganese is .apprx.85%. Taking into account the shortage of SS scrap in India the ASM process is recommended for manufacturing high-quality SS.
CC 55-1 (Ferrous Metals and Alloys)
ST stainless steel secondary metallurgy argon
IT Furnaces, electric
(arc, for stainless steel manufacture in argon-containing atmospheric)
IT 12597-68-1
(furnaces, arc, for stainless steel manufacture in argon-containing atmospheric)
IT 12725-26-7P, AISI301
(manufacture of, in elec. arc furnace, dilution of atmospheric by Ar in)
IT 7440-37-1, Argon, uses and miscellaneous
(stainless steel manufacture in atmospheric containing)

L74 ANSWER 19 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1988:496851 HCAPLUS Full-text
DOCUMENT NUMBER: 109:96851
ORIGINAL REFERENCE NO.: 109:16109a,16112a
TITLE: Magnesite in modification and/or foaming of metallurgical slags
INVENTOR(S): Schellberg, Franz
PATENT ASSIGNEE(S): Didier-Werke A.-G., Fed. Rep. Ger.
SOURCE: Ger. Offen., 8 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

DE 3644518	A1	19880714	DE 1986-3644518 <--	19861224
ES 2007763	A6	19890701	ES 1987-3603 <--	19871216
GB 2199025	A	19880629	GB 1987-30054 <--	19871223
GB 2199025	B	19900905		
FR 2609019	A1	19880701	FR 1987-18093 <--	19871223

PRIORITY APPLN. INFO.: DE 1986-3644518 A 19861224 <--

ED Entered STN: 17 Sep 1988

AB In forming of molten slags in metallurgical vessels or elec.-arc furnaces lined with a basic refractory, a granular MgCO3 of <15 mm size is added as a magnesite source for protection of the refractory lining. The magnesite addition is suitable for modification and/or foaming of the molten slag in steelmaking. The MgCO3 is optionally: 95% magnesite having loss on ignition (LOI) 52.2%; natural magnesite from froth flotation, containing MgO 45, CaO 3, SiO2 1.0, Fe2O3 0.8%, and LOI 48%; or crushed and washed natural magnesite containing MgO 36, CaO 10, and SiO2 5%, LOI 47%, and only traces of S and P. Thus, in the manufacture of soft steel in an elec.-arc furnace the metal yield was 88.4, vs. 72.4% without the use of magnesite precursor.

IPCI C04B0005-06 [ICM,4]; C04B0022-10 [ICS,4]
IPCR C04B0005-06 [I,A]; C21B0003-06 [I,A]; C21C0005-36 [N,A]; C21C0005-44 [N,A]
CC 55-1 (Ferrous Metals and Alloys)
IT 12597-68-1P, Stainless steel, preparation 12597-69-2P, Steel, preparation
(manufacture of, magnesite addition to slags in)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 20 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1988:613919 HCAPLUS Full-text
DOCUMENT NUMBER: 109:213919
ORIGINAL REFERENCE NO.: 109:35373a,35376a
TITLE: Ferrochromium from domestic lateritic chromites
AUTHOR(S): Nafziger, Ralph H.
CORPORATE SOURCE: Albany Res. Cent., Pyrometall. Sect. U. S. Bur. Mines', OR, USA
SOURCE: Journal of Metals (1988), 40(9), 34-7
CODEN: JOMTAA; ISSN: 0022-2674
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 10 Dec 1988

AB The feasibility of smelting a chromite concentrate from residues generated by the processing of Ni and Co from laterites was studied. The product sought was a high-C ferrochromium suitable for stainless- and alloy-steel production The concentrate was blended with reductants and fluxing constituents and was smelted under submerged arc conditions in a laboratory-scale, single-phase a.c. elec. arc furnace. Metallurgical-grade coke provides the best quality product. High-C ferrochromium, which met ASTM specifications except for P and S, was obtained. Agglomeration of the charge materials was not required. The Cr recovery was 78-97%.

CC 54-2 (Extractive Metallurgy)
IT Coke
(metallurgical, chromite concentrate smelting with, for ferrochromium preparation)

L74 ANSWER 21 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1986:190377 HCAPLUS Full-text
DOCUMENT NUMBER: 104:190377
ORIGINAL REFERENCE NO.: 104:30095a,30098a
TITLE: Construction and operation of metal refining converter for foundries and mini steel mills
AUTHOR(S): Wagener, Elmar; Sinha, Kamalendar M.
CORPORATE SOURCE: Mannesmann Demag Huettentech., Duisburg, Fed. Rep. Ger.
SOURCE: MPT, Metallurgical Plant and Technology (1985), 8(5), 22, 26-8, 30, 32, 35
CODEN: MMPTDD; ISSN: 0171-4511
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 01 Jun 1986
AB A duplex steelmaking process for mini steel mills and foundries was developed and consisted of a premelting unit, such as elec.-arc, induction or even cupola furnace and bottom-blowing converter having a capacity of 5-130 tons. The melt is charged and refined by gas blowing to produce high-quality steel. Various combinations of O, Ar, and N are injected by automated control of the amount and rate. The mech. and phys. properties of the steel 42CrMo4 [39302-74-4] and X2CrNiMo18112 stainless steel [11134-23-9] are improved. Unit and process parameters in the 2-stage manufacture are also given.
CC 55-1 (Ferrous Metals and Alloys)
ST ladle metallurgy converter refining; steel refining converter duplex
IT 11134-23-9 39302-74-4
(making of, in elec.-arc furnace followed by melt refining in bottom-blown converter)

L74 ANSWER 22 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1983:598931 HCAPLUS Full-text
DOCUMENT NUMBER: 99:198931
ORIGINAL REFERENCE NO.: 99:30575a,30578a
TITLE: Fabrication of special steels in metallurgical vessels
INVENTOR(S): Robert, Edgardo J.
PATENT ASSIGNEE(S): Pennsylvania Engineering Corp., USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4405365	A	19830920	US 1982-412552 <--	19820830
CA 1214941	A1	19861209	CA 1983-436501 <--	19830912
EP 134857	A1	19850327	EP 1983-305468	19830916

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R: AT, DE, FR, GB, IT, SE

BR 8305186 A 19850423 BR 1983-5186 19830919

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PRIORITY APPLN. INFO.: US 1982-412552 19820830

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ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 12 May 1984

AB The AOD (Ar-O Decarburizing) converter is replaced by an elec.-arc furnace modified with a retractable lance or tuyere in a wall. The lance has 2 concentric pipes for sep. injection of a refining gas mixture, and of a hydrocarbon gas for cooling during submerged blow. Conventional operation is used when manufacturing a high-Cr stainless steel from the melts containing 0.8-1% C. During the final decarburization the lance is inserted into the melt for injection of Ar-O gas at 1:3 ratio through the center tube, and of natural gas through the peripheral tube at .apprx.10% of the Ar-O flow rate. Thus, an elec.-arc furnace of 20-ton capacity held the desulfurized melt containing C 0.95, Cr 18, Si 0.25, and Al 0.05%. The lance blowing was then applied with the injection of natural gas at 50-60 m3/h, and of O + Ar at 600 m3/h. The melt was decarburized to 0.03% C, and the final Cr content was 16%. The slag was treated with ferrosilicon for reduction, to recover the oxidized Cr. Molten stainless steel was tapped into a ladle for the final composition adjustment.

INCL 075060000

IPCI C21C0005-32 [ICM]

IPCR C21C0005-00 [I,A]; C21C0005-52 [I,A]; F27B0003-08 [I,A]

NCL 075/528.000; 075/529.000; 075/530.000; 075/558.000; 266/225.000

CC 55-1 (Ferrous Metals and Alloys)

ST stainless steel manuf elec furnace; lance stainless steel decarburizing

IT Lances

(retractable, in elec.-arc furnace, stainless steel melt decarburization blowing with)

IT Furnaces, electric

(arc, stainless steel manufacture in, lance blowing for)

IT 12597-68-1P, preparation

(manufacture of, melt decarburizing in elec.-arc furnace for, lance in blowing for)

IT 87793-73-5P

(refining of, in elec.-arc furnaces, melt decarburizing in, lance blowing for)

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L74 ANSWER 23 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1982:55818 HCAPLUS Full-text

DOCUMENT NUMBER: 96:55818

ORIGINAL REFERENCE NO.: 96:9159a,9162a

TITLE: Prereduction and melting of domestic chromites

AUTHOR(S): Nafziger, Ralph H.; Sanker, Phillip E.; Tress, Jack E.; McCune, Robert A.

CORPORATE SOURCE: Twin Cities Res. Cent., U. S. Dep. Interior, USA

SOURCE: Electric Furnace Conference Proceedings (1981), Volume Date 1980, 38, 27-45

CODEN: EFCPAY; ISSN: 0096-0128
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 12 May 1984
AB Feasibility of chromite ore preredn. was investigated with C-containing reductants. The melting of prereduced products was compared with that of ore concs. Metalization of .apprx.75% was obtained for high-Fe chromites in batch rotary kiln with reduction by coal char and coke breeze, but was .apprx.95% for metallurgical chromite. The prereduced products were suitable for production of ferrochromium [11114-46-8] in elec.-arc furnace, and thus for manufacture of stainless steel. Furnace melting and productivity were improved, and elec. energy requirements were decreased with the ore preredn. products.
CC 54-2 (Extractive Metallurgy)
Section cross-reference(s): 72
IT 11114-46-8P
(smelting of, in elec.-arc furnace, chromite ore preredn. for)

L74 ANSWER 24 OF 33 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1981:179726 HCAPLUS Full-text
DOCUMENT NUMBER: 94:179726
ORIGINAL REFERENCE NO.: 94:29329a,29332a
TITLE: Elemental compositions of suspended particles released from various small sources (II)
AUTHOR(S): Mamuro, Tetsuo; Mizohata, Akira; Kubota, Torahide
CORPORATE SOURCE: Radiact. Cent. Osaka Prefect., Sakai, Japan
SOURCE: Taiki Osen Gakkaishi (1980), 15(4), 167-72
CODEN: TOSGDC; ISSN: 0386-7064
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
ED Entered STN: 12 May 1984
AB The ratio of the concentration (μg/g) of an element in particulate matter at emission source to the average concentration (μg/g) of the element in atmospheric particulate matter is obtained from multielemental anal. The following have relatively large ratios: drying of aggregate- Al(4.1), Ca(4.7), Sc(5.6), Fe(3.2), and Th(3.4); drying for linear ABS, colored galvanized iron sheet, and electrostatic painting- Ti(26), Ni(3.9), Ba(4.0), and Ta(110); calcination of barite [13462-86-7]- K(3.2), Zn(7.0), As(11), Rb(16), Cd(6.0), Sb(15), Cs(8.6), Ba(250), and Pb(16); powder metallurgy of ultra-hard alloy- Cr(5.4), Co(58), and W(240); drying of sand molds- Cl(3.8), Cr(3.7), and Zn(5.2); rotary drying of thenardite [13759-07-4]- Na(20) and S(3.4); reaction of phosphate rock and H_2SO_4- As(240), Br(59), and Pb(45); crushing phosphate rock- Ca(14), La(3.7), and Ce(5.3); drying of Hg chloride- Cl(7.8) and Cr(3.2); drying furnace of Hg amide chloride- Cl(47) and Ce(24); manufacture of metallic soap- Pb(10); dissoln. of $FeCl_3$- Na(4.5), Cl(18), and Br(15); absorption of Cl and HCl- Cl(902), Cr(40), and Br(13); shot blasting, hot scarfing, sand blasting, and buffing- Ti(3.5), Cr(26), Fe(3.9), Co(7.9), Ni(10), Cu(4.3), Se(14), Ag(4.6), Ce(5.9), Hf(15), W(7.0), and Th(5.1); and polishing of asbestos brakes and mixing fireproof paint- Ti(3.9) and Co(6.3). The ratios of many other elements are .apprx.1.
IT 7440-43-9, biological studies
(in airborne particles, from small industrial sources)
RN 7440-43-9 HCAPLUS
CN Cadmium (CA INDEX NAME)

Cd

IT 7439-92-1, biological studies 7440-47-3, biological studies 7440-50-8, biological studies
(in suspended airborne particles, from small industrial sources)
RN 7439-92-1 HCAPLUS
CN Lead (CA INDEX NAME)

Pb

RN 7440-47-3 HCAPLUS
CN Chromium (CA INDEX NAME)

Cr

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

CC 59-2 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 25, 42, 46, 49, 54, 55
IT Powder metallurgy
(of ultra-hard alloys, airborne particles from, elemental composition of)
IT Coating process
(painting, electrostatic, airborne particles from, elemental composition of)
IT 7429-90-5, biological studies 7439-89-6, biological studies 7440-02-0, biological studies 7440-09-7, biological studies 7440-17-7, biological studies 7440-20-2, biological studies 7440-22-4, biological studies 7440-25-7, biological studies 7440-29-1, biological studies 7440-32-6, biological studies 7440-36-0, biological studies 7440-38-2, biological studies 7440-39-3, biological studies 7440-43-9, biological studies 7440-46-2, biological studies 7440-58-6, biological studies 7440-66-6, biological studies 7440-70-2, biological studies 7782-49-2, biological studies
(in airborne particles, from small industrial sources)
IT 7439-91-0, biological studies 7439-92-1, biological studies 7440-23-5, biological studies 7440-33-7, biological

studies 7440-45-1, biological studies 7440-47-3, biological studies 7440-48-4, biological studies 7440-50-8 , biological studies 7726-95-6, biological studies 7782-50-5, biological studies
(in suspended airborne particles, from small industrial sources)

=> d 25-32 full

L74 ANSWER 25 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN
AN 2006-115194 [200612] WPIX Full-text
TI Duplex process for stainless steel melting method, involves melting of steel waste and alloy additives, deoxidizer feeding and slag foaming in electric furnace, chromium contained in slag reduced, oxygen fed into bath
DC M24
IN BRATKO G A; GORBATOV A V; LEVADA A G; LIVSHITS D A; MAKAREVICH A N; PALKIN S P; SHCHERBAKOV E I; VOROBEV N I; ZVONAREV V P
PA (CHME-R) CHELY MECHEL METAL COMBINE STOCK CO
CYC 1
PI RU 2268310 C2 20060120 (200612)* RU [0]
ADT RU 2268310 C2 RU 2003-137282 20031224
PRAI RU 2003-137282 20031224
IPCR C21C0005-00 [I,C]; C21C0005-52 [I,A]; C21C0007-04 [I,A]; C21C0007-04 [I,C]; C21C0007-076 [I,A]
AB RU 2268310 C2 UPAB: 20060217
NOVELTY - Claimed method includes melting of steel waste and alloy additives, deoxidizer feeding, and slag foaming in electric furnace. Then chromium contained in slag is reduced; oxygen is fed into bath, intermediate and slag discharged into overflow ladle, slag is skimmed, metal is charged into bottom-blowing converter, melt is decarbonized, and desired chemical composition is adjusted. For finished and fuller chromium reducing slag-forming additives and deoxidizers are fed in process of intermediate and slag discharging into overflow ladle, when said ladle is filled on 2/3. Method of present invention makes in possible to increase chromium yield from slag at least to 70 %.
USE - Non-iron metallurgy, method for high-chromium (more than 9 % of chromium content) intermediate melting in electric arc furnace followed by refining in bottom-blowing converter.
ADVANTAGE - Increased chromium yield, decreased ferrous alloys consumption, accelerated melt process and reduced energy consumption.2 cl, 1 ex
FS CPI
MC CPI: M24-A07; M24-B02D; M24-C02; M24-C07

L74 ANSWER 26 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN
AN 2004-097694 [200410] WPIX Full-text
DNC C2004-040538 [200410]
TI Method of producing carbon steel or stainless steel product involves changing melt quality from carbon steel to stainless steel or vice versa, by introducing oxygen into vessels, during tapping periods of vessels
DC M24
IN MEIERLING P; PLESCHIUTSCHNIGG F
PA (MEIE-I) MEIERLING P; (PLES-I) PLESCHIUTSCHNIGG F
CYC 1
PI US 20030230163 A1 20031218 (200410)* EN 5[1]
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ADT US 20030230163 A1 US 2002-173947 20020618
PRAI US 2002-173947 20020618
IPCR C21C0005-00 [I,A]; C21C0005-28 [I,A]; C21C0005-52 [I,A]
EPC C21C0005-00B; C21C0005-28; C21C0005-52E; C21C0005-52P
NCL NCLM 075/010.420
NCLS 266/225.000
AB US 20030230163 A1 UPAB: 20050528
NOVELTY - An electrode system (11) is pivoted over metallurgical vessels (9, 10) during melting of scrap. An immediate change of melt quality from carbon steel to stainless steel or vice versa, is effected by introducing oxygen into vessels using top or side lances (12, 13), during tapping periods of vessels which depend on operation of an adjoining casting machine (18).
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for carbon steel product or stainless steel product producing plant.
USE - For producing products of carbon steel or stainless steel in electric arc furnace converter.
ADVANTAGE - Products of different qualities can be produced by operating two metallurgical vessels, according to product production program of manufacturer.
DESCRIPTION OF DRAWINGS - The figure shows an exploded view of carbon steel or stainless steel product producing plant.
Metallurgical vessels (9, 10)
Electrode system (11)
Top lance (12)
Side lance (13)
Casting machine (18)
FS CPI
MC CPI: M24-B02D

L74 ANSWER 27 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN
AN 2001-300347 [200131] WPIX Full-text
DNC C2001-092259 [200131]
TI Foaming of steel-making slag for e.g. in electric arc furnaces and ladles involves use of calcium nitrate as a foaming agent
DC E33; M24
IN ENGH T A; TUVNES P
PA (NHYD-C) NORSK HYDRO AS
CYC 90
PI WO 2001029271 A1 20010426 (200131)* EN 12[0]
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NO 9905072 A 20010419 (200131) NO
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AU 2000079727 A 20010430 (200148) EN
<--
NO 311226 B1 20011029 (200171) NO
<--
BR 2000014781 A 20020611 (200248) PT
<--
EP 1230404 A1 20020814 (200261) EN
<--
KR 2002042721 A 20020605 (200277) KO
<--
CN 1379825 A 20021113 (200317) ZH
<--
JP 2003512523 T 20030402 (200325) JA 15
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ZA 2002002602 A 20030923 (200368) EN 18
<--
EP 1230404 B1 20031217 (200404) EN
<--
DE 60007355 E 20040129 (200416) DE
ES 2213049 T3 20040816 (200455) ES
RU 2241046 C2 20041127 (200504) RU
CN 1206373 C 20050615 (200643) ZH
IN 2002MN00430 A 20070608 (200748) EN

ADT WO 2001029271 A1 WO 2000-NO345 20001018; NO 9905072 A NO 1999-5072 19991018; NO 311226 B1 NO 1999-5072 19991018; AU 2000079727 A AU 2000-79727 20001018; BR 2000014781 A BR 2000-14781 20001018; CN 1379825 A CN 2000-814517 20001018; CN 1206373 C CN 2000-814517 20001018; DE 60007355 E DE 2000-60007355 20001018; EP 1230404 A1 EP 2000-970328 20001018; EP 1230404 B1 EP 2000-970328 20001018; DE 60007355 E EP 2000-970328 20001018; ES 2213049 T3 EP 2000-970328 20001018; BR 2000014781 A WO 2000-NO345 20001018; EP 1230404 A1 WO 2000-NO345 20001018; JP 2003512523 T WO 2000-NO345 20001018; EP 1230404 B1 WO 2000-NO345 20001018; DE 60007355 E WO 2000-NO345 20001018; RU 2241046 C2 WO 2000-NO345 20001018; JP 2003512523 T JP 2001-532251 20001018; RU 2241046 C2 RU 2002-113094 20001018; ZA 2002002602 A ZA 2002-2602 20020403; KR 2002042721 A KR 2002-704859 20020416; IN 2002MN00430 A WO 2000-NO345 20001018; IN 2002MN00430 A IN 2002-MN430 20020408

FDT DE 60007355 E Based on EP 1230404 A; ES 2213049 T3 Based on EP 1230404 A; NO 311226 B1 Previous Publ NO 9905072 A; AU 2000079727 A Based on WO 2001029271 A; BR 2000014781 A Based on WO 2001029271 A; EP 1230404 A1 Based on WO 2001029271 A; JP 2003512523 T Based on WO 2001029271 A; EP 1230404 B1 Based on WO 2001029271 A; DE 60007355 E Based on WO 2001029271 A; RU 2241046 C2 Based on WO 2001029271 A

PRAI NO 1999-5072 19991018

IC ICM C21C005-52; C21C005-54

IPCI C21C0005-28 [I,A]; C21C0007-00 [I,A]

IPCR C21C0005-00 [I,C]; C21C0005-28 [N,C]; C21C0005-36 [N,A]; C21C0005-52 [I,A]; C21C0005-54 [I,A]

EPC C21C0005-52B2; C21C0005-54

ICO M21C0005:36F

FCL C21C0005-54

FTRM 4K014; 4K014/CC07

AB WO 2001029271 A1 UPAB: 20050705

NOVELTY - Use of calcium nitrate as a foaming agent for steel-making slag.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for foaming of steel-making slag involving adding the calcium nitrate to the slag alone or together with carbon.

USE - For foaming of stainless steel slag for e.g. in electric arc furnace and ladles.

ADVANTAGE - Use of calcium nitrate reduces the oxidizing conditions that increases the level of Cr2O3 in the slag and thus reduces the content of Cr in the slag. Use of calcium nitrate serve the triple objective of adding lime to increase the basicity of the slag (for removal of P and S), supplying gaseous components N2 and H2O to promote foaming and O2 for the reaction with the injected carbon, giving CO which also promotes foaming. Calcium nitrate can be used with or without amounts of crystal water.

TECH METALLURGY - Preferred Method: Calcium nitrate alone or mixed with carbon is injected into the slag (preferably stainless steel slag) with injection gases such as air, nitrogen, carbon dioxide or inert

gases from above the melt. The solid components are injected separately or with the same lance or injected as pre-fused granules. FeSi, Al or Mg is added before the addition of calcium nitrate and carbon. A ratio between calcium nitrate and carbon is 4:1 - 2:1.

ABEX EXAMPLE - 1.5 kg of AISI 302 (stainless steel) was melted in a crucible by a gas flame. After melting, 0.3 kg of Nitcal (RTM; calcium nitrate) (I), was poured on top of the melt. The high temperature of the melt and crucible caused the calcium nitrate to melt, decompose and react by evolving gases, which bubbled out from the molten calcium nitrate and created foam. The decomposition time was 2 minutes. The calcium nitrate was converted to a foamy substance with 2 - 3 times volume increase. Full scale testing of (I) in an electric arc furnace (EAF) with the purpose to observe the behavior and foaming potential of (I) had been conducted by injecting up to 300 kg of (I) per melt by air into the melt simultaneously with separate carbon injection. No dramatic reactions were occurred despite the crystal water content in (I). The test showed that (I) was easy to handle and inject into the melt of the EAF by simple and standard injection equipment. Gas evolution and reaction with carbon was observed. Injection by air gave oxidizing conditions that increased the level of Cr2O3 in the slag. Injection of (I) together with carbon was such that the oxygen in (I) reacted with carbon to CO, which did not increase the respective levels. Thus the results of the test in the EAF showed that 1 kg of (I) was injected into the melt by nitrogen together with 0.3 kg carbon to achieve reducing conditions and reduced loss of Cr to the slag.

FS CPI

MC CPI: E31-H03; E31-N05C; E34-D03; M24-C07

L74 ANSWER 28 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN

AN 2001-524407 [200158] WPIX Full-text

DNC C2001-156655 [200158]

TI Stainless steel alloy for producing consumer durables, e.g. cutlery, contains manganese, silicon, chromium, nickel and copper

DC M27

IN JINDAL R

PA (JIND-N) JINDAL STRIPS LTD

CYC 1

PI GB 2359095 A 20010815 (200158)* EN 19[0]

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ADT GB 2359095 A GB 2000-3163 20000214

PRAI GB 2000-3163 20000214

IPCR C22C0038-00 [I,A]; C22C0038-42 [I,A]; C22C0038-58 [I,A]

EPC C22C0038-00B; C22C0038-42; C22C0038-58

AB GB 2359095 A UPAB: 20050526

NOVELTY - Improved stainless steel alloy consists of (weight%): carbon (0.03-0.08), manganese (7-10.25), silicon (0.1-0.75), chromium (14.25-16.5), nickel (2.25-4.75), copper (0.9-2), nitrogen (0.01-0.2), impurities (0.02-0.1), and iron (75.44-65.37).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of producing the improved stainless steel alloy by: melting a charge of 23.75-27.5 weight% ferro-chromium alloy, 8-17 weight% ferro-nickel alloy, 10-14.6 ferro-manganese alloy, 0.15-1 ferro-silicon alloy, 0.9-2 weight% copper, and 57.2-37.9 weight% iron) at around 1500 degrees C; injecting a gaseous mixture which reacts with metallic impurities in the melt to convert them into slag and with

non-metallic impurities to convert them into a gaseous compounds; separating the slag from the residual molten metal; and recovering the refined alloy.

USE - For producing consumer durables, e.g. cutlery, milk pails, containers and culinary accessories and utensils, including saucepans, skillets, woks, stirrers, spatulas, cooking spoons, ladles, and measuring spoons.

ADVANTAGE - The inventive stainless steel alloy has an enhanced formability and an austenitic non-magnetic structure. It exhibits a minimum tensile stress of 515 MPa, a minimum yield strength of 205 MPa, a minimum percentage elongation (in 50 mm gauge length) of 40, and a maximum hardness of 217 (Brinell Hardness) and 95 (Rockwell B).

TECH METALLURGY - Preferred Process: The charge is heated to molten state in an electric arc furnace, and the molten charge is refined in an argon-oxygen decarburization converter. The manganese in the molten charge improves the solubility of the injected nitrogen, and the dissolved nitrogen acts as an austenitic stabilizer in the resulting alloy. Hydrogen and excess carbon present as impurities in the molten charge are respectively converted to water vapor and carbon monoxide (CO) by reaction with oxygen in the injected gaseous mixture. CO produced is converted to carbon dioxide, and water vapor and carbon dioxide are allowed to escape in the atmosphere along with any unconverted elemental hydrogen.

Preferred Composition: The ferro-chromium alloy comprises at least 60% chromium, the ferro-nickel alloy comprises at least 28% nickel, the ferro-manganese alloy comprises at least 70% manganese, and the ferro-silicon alloy comprises at least 70% silicon. Iron is present in the form of ferrous scrap. The impurities comprise 0.01-0.07 wt.% phosphorus and 0.01-0.03 wt.% sulfur.

INORGANIC CHEMISTRY - Preferred Mixture: The gaseous mixture contains oxygen, argon, and nitrogen.

FS CPI

MC CPI: M27-A01; M27-A01C; M27-A01M; M27-A01N; M27-A01S; M27-A04; M27-A04C; M27-A04M; M27-A04N; M27-A04S

L74 ANSWER 29 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN

AN 2000-257022 [200022] WPIX Full-text

DNC C2000-078591 [200022]

TI Production of a bulk molten steel in an electric arc furnace involves adding of a doping agent to the top slag in the form of a particle granulated product

DC M24; M27

IN GOERNERUP M; GOERNERUP M R

PA (UEDA-C) UDDEHOLM TECHNOLOGY AB

CYC 83

PI WO 2000014287 A1 20000316 (200022)* EN 15[0]
<--
SE 9802976 A 20000304 (200025) SV
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SE 512757 C2 20000508 (200029) SV
<--
AU 9955405 A 20000327 (200032) EN
<--
EP 1117845 A1 20010725 (200143) EN
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US 6689189 B1 20040210 (200413) EN
EP 1117845 B1 20040602 (200441) EN
DE 69917793 E 20040708 (200445) DE

EP 1117845 B8 20040922 (200462) EN
ES 2222722 T3 20050201 (200510) ES
DE 69917793 T2 20050818 (200554) DE

ADT WO 2000014287 A1 WO 1999-SE1290 19990719; SE 9802976 A SE 1998-2976 19980903; SE 512757 C2 SE 1998-2976 19980903; AU 9955405 A AU 1999-55405 19990719; DE 69917793 E DE 1999-69917793 19990719; DE 69917793 T2 DE 1999-69917793 19990719; EP 1117845 A1 EP 1999-941932 19990719; EP 1117845 B1 EP 1999-941932 19990719; DE 69917793 E EP 1999-941932 19990719; EP 1117845 B8 EP 1999-941932 19990719; ES 2222722 T3 EP 1999-941932 19990719; DE 69917793 T2 EP 1999-941932 19990719; EP 1117845 A1 WO 1999-SE1290 19990719; US 6689189 B1 WO 1999-SE1290 19990719; EP 1117845 B1 WO 1999-SE1290 19990719; DE 69917793 E WO 1999-SE1290 19990719; EP 1117845 B8 WO 1999-SE1290 19990719; DE 69917793 T2 WO 1999-SE1290 19990719; US 6689189 B1 US 2001-786249 20010302

FDT DE 69917793 E Based on EP 1117845 A; ES 2222722 T3 Based on EP 1117845 A; DE 69917793 T2 Based on EP 1117845 A; AU 9955405 A Based on WO 2000014287 A; EP 1117845 A1 Based on WO 2000014287 A; US 6689189 B1 Based on WO 2000014287 A; EP 1117845 B1 Based on WO 2000014287 A; DE 69917793 E Based on WO 2000014287 A; EP 1117845 B8 Based on WO 2000014287 A; DE 69917793 T2 Based on WO 2000014287 A

PRAI SE 1998-2976 19980903

IC ICM C21C005-52

IPCR C21B0005-02 [I,A]; C21B0005-02 [I,C]; C21C0005-00 [I,A]; C21C0005-00 [I,C]; C21C0005-52 [I,A]; C21C0005-54 [I,A]; C21C0007-00 [I,A]; C21C0007-00 [I,C]; C22B0001-14 [I,C]; C22B0001-248 [I,A]; C22C0033-02 [I,A]; C22C0033-02 [I,C]

EPC C21B0005-02; C21C0005-00B; C21C0005-52B2; C21C0005-54; C21C0007-00A; C21C0007-00D; C22B0001-248; C22C0033-02F2B

ICO L22F0998:00+B22F9/08

NCL NCLM 075/316.000
NCLS 075/331.000

AB WO 2000014287 A1 UPAB: 20060116

NOVELTY - A bulk of molten steel is produced in an electric arc furnace by adding a doping agent to the top slag in the form of particle granulated product during at least one phase of the production. The doping agent having a melting a melting point of less than 1350 degrees C comprises 0-5% silicon, 2-7% carbon, 0-3% manganese, and the remainder pig iron.

DETAILED DESCRIPTION - A bulk of molten steel is produced in an electric arc furnace by formation of a foaming top slag at 1400-1800 degrees C. Oxygen is supplied in the form of oxygen gas and/or other oxygen carriers (e.g. metallic oxides) to melt and oxidized at least part of the silicon and carbon existing in the melt for heat generation and to generate carbon monoxide (CO) gas and/or carbon dioxide (CO2) gas which is useful to slag foaming.

During the production process, a doping agent in the form particle granulated product is added to the top slag. The doping agent having a melting a melting point of less than 1350 degrees C comprises 0-5% silicon (Si), 2-7% carbon (C), 0-3% manganese (Mn) and the remainder is pig iron.

The particles are homogeneously oval or round in shape obtainable by granulation of a melt comprising disintegration of a stream of the melt to drops which are cooled in a water bath to form a granulate.

An INDEPENDENT CLAIM is also included for a metallurgical product applicable as doping agent in the production of steel melts in an electric arc furnace.

USE - The method is used for the production of bulk molten steel in an electric arc furnace where reduction of metallic oxides with a melting point above the process temperature is to take place.

ADVANTAGE - The doping agent improves the condition for reducing the oxidation of valuable metal elements that exist in the slag, contributing to and/or maintaining the slag foaming as well as adding metal to the melt.
TECH METALLURGY - Preferred Compositions: The doping agent contains 0.2-3%, preferably 1-3% Si, 2-5%, preferably 2.5-4.5% C, 0.1-3% Mn and the remainder is pig iron produced in the blast furnace or reduction processes.
Preferred Melt: The melt constitutes a melt of stainless steel containing at least 13%, preferably 17% chromium.
Preferred Particles: At least 80 wt.% of the particles has a particle size of 0.5-8 mm, preferably 1-5.5 mm measured in its largest dimension. It has a bulk density of 3-5.5 kg/l, preferably 3.5-5 kg/l.
FS CPI
MC CPI: M24-B02D; M27-A01

L74 ANSWER 30 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN
AN 1993-207811 [199326] WPIX Full-text
DNC C1993-092003 [199326]
DNN N1993-159815 [199326]
TI Device for continuous charging of bulk metal prods. - has duct emerging into furnace via hole in arched roof and conveyor belt feeding metallic prods. into duct
DC M24; Q77
IN SOIDE C
PA (IRSF-C) IRSID SNC
CYC 1
PI FR 2681937 A3 19930402 (199326)* FR 10[2]
<--
ADT FR 2681937 A3 FR 1991-12002 19910930
PRAI FR 1991-12002 19910930
IPCR C21C0005-00 [I,C]; C21C0005-52 [I,A]; F27B0003-10 [I,C]; F27B0003-18 [I,A]; F27D0013-00 [I,A]; F27D0013-00 [I,C]; F27D0017-00 [N,A]; F27D0017-00 [N,C]; F27D0019-00 [N,A]; F27D0019-00 [N,C]; F27D0003-00 [N,A]; F27D0003-00 [N,C]; F27D0003-10 [N,A]
AB FR 2681937 A3 UPAB: 20050823
The device consists of duct (11) emerging into the furnace (1) via hole (12) in the arched roof (4) and conveyor belt (19) feeding the metallic prods. into the duct (11). At least one electromagnet (17) associated with electrical control system (18) to activate and deactivate the electromagnet (17) is provided. The electromagnet (17) is arranged on a section of the duct (11) that is inclined w.r.t. the vertical at an angle of between 20 and 40 deg. The duct (11) is made from non-magnetic material such as a non-magnetic stainless steel. An additional duct may also be provided to facilitate the extraction of fumes generated in the furnace. The metallurgical furnace, notably an electric arc furnace fitted with this device is also claimed.
USE/ADVANTAGE - The device is used for the continuous charging of bulk ferromagnetic materials, such as steel scrap, into metallurgical furnace, notably electric arc steel making furnace. Its major advantage is that it allows the fall of the scrap through the charging chute to be controlled thus improving its preheating in the charge chute and permitting the charging to be in discrete compact packets.
FS CPI; GMPI
MC CPI: M24-A07

L74 ANSWER 31 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN
AN 1992-182871 [199222] WPIX Full-text

DNC C1992-083699 [199321]
TI Stainless steel production in electric arc furnaces - without sec. processing with bottom blowing by stirring gas, from stainless steel scrap, high carbon@ ferrochromium, ferrosilicon and fluxes
DC M24; M28
IN LAZCANO-NAVARRO A
PA (MEIN-N) INST MEXICANO INVESTIGACIONES SIDERURGIC
CYC 1
PI US 5112387 A 19920512 (199222)* EN 3[1]
<--
ADT US 5112387 A US 1991-748049 19910821
PRAI US 1991-748049 19910821
IPCR C21C0005-52 [I,A]; F27B0003-08 [I,A]; F27B0003-22 [I,A]
EPC C21C0005-52B2; C21C0005-52G; F27B0003-08A; F27B0003-22A
NCL NCLM 075/010.420
AB US 5112387 A UPAB: 20050504
Prod. comprises: (a) charging a solid charge of stainless steel scrap, high C ferrochromium, ferrosilicon and fluxes, (b) melting the charge while stirring with natural gas, Ar, N2 and combinations of these gases blown through an injection device in the furnace base, (c) after melting, raising the electrodes to an upper position, (d) providing a charging door stopper to avoid liquid bath ejection during stirring, (e) oxidising by blowing O2 through a lance or a lateral lance through the furnace side or a combination of the two at a flow rate high enough to obtain a 0.03% decarbonisation level in the shortest time, (f) after oxidising, removing the stopper and adding a reducer deoxidant with Cr ore addns. whilst maintaining stirring gas at a level sufficient to obtain good mixing, and (g) sampling and deslagging the charge, adding ferro alloys and controlling temperature by arc adjustment until tapping temperature is reached.
USE/ADVANTAGE - Stainless steel is produced without using the added oxygen process and with the ability to produce a good fast melt and the ability to reinforce the oxidising or reducing conditions by bottom blowing with the possibility of maintaining the desired temperature by electric arc operation. Metallurgical benefits relate to lower bath oxidation level resulting in lower chromium oxidation and therefore lower deoxidant consumption.
FS CPI
MC CPI: M24-B02D

L74 ANSWER 32 OF 33 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN
AN 1986-339476 [198652] WPIX Full-text
DNC C1986-147190 [199321]
TI New very dark brown inorganic filter pigment mixture - based on iron, manganese, calcium and magnesium oxide cpds. and functional additives
DC E37; G01; L02; M24
IN MARX G; MULLER F; STIPP P; TITSCH U
PA (GISA-N) VEB KOMB GISAG
CYC 1
PI DD 238620 A 19860827 (198652)* DE 3[0]
<--
ADT DD 238620 A DD 1985-277711 19850625
PRAI DD 1985-277711 19850625
IPCR C09C0001-22 [I,A]
AB DD 238620 A UPAB: 20050426
New very dark brown filler-pigment mixture (I), based on oxides of Fe, Mn, Ca and Mg, contains a functional additive of SiO2, CaF and C. Pref. (I) comprises 30.0-70% Fe2O3, 20.0-2% MnO2, 18.0.-5% CaO, 14.5-5% MgO, 5.0-10% SiO2, 10.0-3% Caf, 0.5-5% C and 2.0-0% other cpds. and is stable up to 1100 deg. C. (I) is produced by (a)

melting Fe-C alloys in a metallurgical furnace, especially an electric arc furnace; (b) introducing a blast of O2 or adding oxygen carriers to the molten bath; (c) removing the resultant (I) by suction by producing a relatively high pressure in the furnace or a relatively low pressure in the suction pipe; and (d) working up (I) in plant with coolers and dry filters or coolers, washers and wet filters.

USE/ADVANTAGE - (I) has high thermal stability (e.g. up to 1100 deg. C) and can be produced economically with constant chemical compsn. and physical structure, using constant technical parameters and conditions. It is useful as filler and pigment.

FS CPI

MC CPI: E31-P03; E34-B01; E34-D01; E34-D02; E35-S; E35-U02; G01-A; G01-A01; G01-A05; G01-A06; G01-A11; L02-E05; M24-A05A; M25-J

=> d 33 ibib abs ind

L74 ANSWER 33 OF 33 COMPENDEX COPYRIGHT 2011 EEI on STN

ACCESSION NUMBER: 2003-057344074 COMPENDEX Full-text

TITLE: Controlling the water temperature in the primary de-dusting systems of EAFs

AUTHOR(S): Huscher Olaf; Teschner Jorg

CORPORATE SOURCE: Huscher Olaf; Teschner Jorg (Kuhlmann-Syst.-Kuhl-tech. GmbH, Haltern am See (DE))

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CODEN: MMTIEZ ISSN: 0935-7254
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DOCUMENT TYPE: Journal; Article; General Review

LANGUAGE: English

SUMMARY LANGUAGE: English

ENTRY DATE: Entered STN: 4 Jan 2009
Last updated on STN: 4 Jan 2009

AN 2003-057344074 COMPENDEX Full-text

AB Metallic surfaces nowadays are provided increasingly with coatings, such as paint films, thermoplastics or metallic platings. Melting down such treated steel scrap presents numerous melt shop operators with the problem of corrosion that shortens the life of their de-dusting systems. An effective possibility of protecting water-cooled boiler-tube-type de-dusting systems from the release of corrosive off-gas constituents is offered by Temperature Level Control (TLC) in a closed-circuit cooling system. This concept can be applied not only to new constructions, but also in the modification of existing facilities. The present article is intended to inform mainly about the metrological aspects of TLC, taking as an example the modernisation of the primary de-dusting system and conversion of the conventional cold water cooling system to a closed-circuit re-cooling system at Lech-Stahlwerke in Herbertshofen, Germany.

AN 2003-057344074 COMPENDEX Full-text

CC 444 Water Resources; 532.3 Electric Metallurgical Furnaces; 545.3 Steel; 641.2 Heat Transfer; 701.1 Electricity, Basic Concepts and Phenomena; 802.3 Chemical Operations

CT *Electric furnaces; Cooling; Electric arcs; Melting; Steel; Water

ST Electric arc furnaces (EAF)

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=> d his nofile

     (FILE 'HOME' ENTERED AT 11:34:14 ON 02 DEC 2011)

     FILE 'HCAPLUS' ENTERED AT 11:34:27 ON 02 DEC 2011
L1             1 SEA SPE=ON  ABB=ON  PLU=ON  US20070214912/PN
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 11:34:45 ON 02 DEC 2011
L2            10 SEA SPE=ON  ABB=ON  PLU=ON  (1305-78-8/BI OR 1314-13-2/BI
                 OR 1317-61-9/BI OR 50813-16-6/BI OR 7439-92-1/BI OR
                 7439-95-4/BI OR 7440-43-9/BI OR 7440-47-3/BI OR 7440-50-8/B
                 I OR 7440-62-2/BI)
L3             1 SEA SPE=ON  ABB=ON  PLU=ON  CALCIUM OXIDE/CN
L4             1 SEA SPE=ON  ABB=ON  PLU=ON  ZINC OXIDE/CN
L5             5 SEA SPE=ON  ABB=ON  PLU=ON  L2 AND (MG OR CR OR CU OR CD
                 OR V)/ELS
L6             1 SEA SPE=ON  ABB=ON  PLU=ON  LEAD/CN
L7             2 SEA SPE=ON  ABB=ON  PLU=ON  L2 NOT (L3 OR L4 OR L5 OR L6)
                 E FERRITE/CN
L8             1 SEA SPE=ON  ABB=ON  PLU=ON  FERRITE/CN
L9           337 SEA SPE=ON  ABB=ON  PLU=ON  ?FERRITE?/CNS
L10            1 SEA SPE=ON  ABB=ON  PLU=ON  L9 AND L2

     FILE 'HCAPLUS' ENTERED AT 13:07:14 ON 02 DEC 2011
L11        83972 SEA SPE=ON  ABB=ON  PLU=ON  L3
L12       144416 SEA SPE=ON  ABB=ON  PLU=ON  L4
L13      1172227 SEA SPE=ON  ABB=ON  PLU=ON  L5
L14       255426 SEA SPE=ON  ABB=ON  PLU=ON  L6
L15       100706 SEA SPE=ON  ABB=ON  PLU=ON  (L8 OR L9)
L16        10220 SEA SPE=ON  ABB=ON  PLU=ON  L11 AND L12
L17          413 SEA SPE=ON  ABB=ON  PLU=ON  L16 AND L15
L18            1 SEA SPE=ON  ABB=ON  PLU=ON  L17 AND L1
L19              QUE SPE=ON  ABB=ON  PLU=ON  HYDROMETALLURG? OR HYDRO
                 METALLURG? OR  METALLURG?
L20           13 SEA SPE=ON  ABB=ON  PLU=ON  L17 AND L19
L21         1182 SEA SPE=ON  ABB=ON  PLU=ON  L15 AND L19
L22           13 SEA SPE=ON  ABB=ON  PLU=ON  L21 AND L11 AND L12
L23           92 SEA SPE=ON  ABB=ON  PLU=ON  L16 AND L19
L24           14 SEA SPE=ON  ABB=ON  PLU=ON  L23 AND ?FERRIT?
L25           20 SEA SPE=ON  ABB=ON  PLU=ON  L20 OR L22 OR L24
L26              QUE SPE=ON  ABB=ON  PLU=ON  ELECTRIC ARC FURNACE? OR EAF
L27         1023 SEA SPE=ON  ABB=ON  PLU=ON  L19 AND L26
L28           38 SEA SPE=ON  ABB=ON  PLU=ON  L27 AND ?FERRIT?
L29            2 SEA SPE=ON  ABB=ON  PLU=ON  L28 AND PIGMENT?
L30              QUE SPE=ON  ABB=ON  PLU=ON  COLOR? OR COLOUR? OR PIGMENT?
                 OR DYE? OR STAIN? OR PAINT? OR CHROMA# OR CHROMOGEN? OR
                 CHROMOPHOR? OR TINCT? OR TINT?
L31           85 SEA SPE=ON  ABB=ON  PLU=ON  L27 AND L30
L32            3 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND COAT?/SC,SX
L33           12 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND PUR/RL
L34           28 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND PROC/RL
L35            4 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND REM/RL
L36           36 SEA SPE=ON  ABB=ON  PLU=ON  (L32 OR L33 OR L34 OR L35)
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L37          15 SEA SPE=ON  ABB=ON  PLU=ON  L36 AND (L11 OR L12 OR L13 OR
                L14 OR L15)
L38          36 SEA SPE=ON  ABB=ON  PLU=ON  (L36 OR L37)
L39          55 SEA SPE=ON  ABB=ON  PLU=ON  L25 OR L38
L40          36 SEA SPE=ON  ABB=ON  PLU=ON  L39 AND (1802-2003)/PRY,AY,PY
L41          11 SEA SPE=ON  ABB=ON  PLU=ON  L40 AND DUST#
L42         767 SEA SPE=ON  ABB=ON  PLU=ON  L26 AND L30
L43          10 SEA SPE=ON  ABB=ON  PLU=ON  L42 AND  (HYDROMETALLURG? OR
                HYDRO METALLURG?)
L44           8 SEA SPE=ON  ABB=ON  PLU=ON  L43 AND (1802-2003)/PRY,AY,PY
L45          38 SEA SPE=ON  ABB=ON  PLU=ON  L40 OR L41 OR L44
L46          25 SEA SPE=ON  ABB=ON  PLU=ON  L45 AND L30
L47           3 SEA SPE=ON  ABB=ON  PLU=ON  L27 AND COAT?/SC,SX
L48           1 SEA SPE=ON  ABB=ON  PLU=ON  L47 AND (1802-2003)/PRY,AY,PY
L49          25 SEA SPE=ON  ABB=ON  PLU=ON  L46 OR L48
L50        6890 SEA SPE=ON  ABB=ON  PLU=ON  L19 AND L30
L51         103 SEA SPE=ON  ABB=ON  PLU=ON  L50 AND COAT?/SC,SX
L52          74 SEA SPE=ON  ABB=ON  PLU=ON  L51 AND (1802-2003)/PRY,AY,PY
L53          21 SEA SPE=ON  ABB=ON  PLU=ON  L52 AND (L11 OR L12 OR L13 OR
                L14 OR L15)
L54           2 SEA SPE=ON  ABB=ON  PLU=ON  L53 AND DUST#
L55          21 SEA SPE=ON  ABB=ON  PLU=ON  (L53 OR L54)
L56          21 SEA SPE=ON  ABB=ON  PLU=ON  L55 AND (1802-2003)/PRY,AY,PY
L57          45 SEA SPE=ON  ABB=ON  PLU=ON  L49 OR L56
L58          24 SEA SPE=ON  ABB=ON  PLU=ON  L57 AND PROC/RL
L59           1 SEA SPE=ON  ABB=ON  PLU=ON  L58 AND L1

     FILE 'WPIX' ENTERED AT 13:51:40 ON 02 DEC 2011
L60          22 SEA SPE=ON  ABB=ON  PLU=ON  L27 AND L30
L61           3 SEA SPE=ON  ABB=ON  PLU=ON  L60 AND COAT?
L62          22 SEA SPE=ON  ABB=ON  PLU=ON  (L60 OR L61)
L63           9 SEA SPE=ON  ABB=ON  PLU=ON  L62 AND (PRY<=2003 OR AY<=2003
                OR PY<=2003)

     FILE 'JAPIO' ENTERED AT 13:52:51 ON 02 DEC 2011
L64           0 SEA SPE=ON  ABB=ON  PLU=ON  L62 AND (PRY<=2003 OR AY<=2003
                OR PY<=2003)

     FILE 'PASCAL' ENTERED AT 13:53:03 ON 02 DEC 2011
L65           7 SEA SPE=ON  ABB=ON  PLU=ON  L62 AND (PRY<=2003 OR AY<=2003
                OR PY<=2003)
L66           0 SEA SPE=ON  ABB=ON  PLU=ON  L65 AND PIGMENT?
L67           0 SEA SPE=ON  ABB=ON  PLU=ON  L65 AND COAT?
L68           0 SEA SPE=ON  ABB=ON  PLU=ON  (L66 OR L67)

     FILE 'COMPENDEX' ENTERED AT 13:53:50 ON 02 DEC 2011
L69         144 SEA SPE=ON  ABB=ON  PLU=ON  (L60 OR L61)
L70          76 SEA SPE=ON  ABB=ON  PLU=ON  L69 AND PY<=2003
L71           0 SEA SPE=ON  ABB=ON  PLU=ON  L70 AND PIGMENT?
L72           1 SEA SPE=ON  ABB=ON  PLU=ON  L70 AND COAT?
L73           1 SEA SPE=ON  ABB=ON  PLU=ON  (L71 OR L72)

     FILE 'HCAPLUS, WPIX, COMPENDEX' ENTERED AT 14:03:47 ON 02 DEC 2011
L74          33 DUP REM L58 L63 L64 L68 L73 (1 DUPLICATE REMOVED)
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